2019-12

A COST-BENEFIT ANALYSIS OF A U.S. NAVY OOCYTE CRYOPRESERVATION PROGRAM FOR FEMALE NAVAL OFFICER RETENTION

Kingery, Amanda B.; Lee, Heather K.

Monterey, CA; Naval Postgraduate School

NAVAL POSTGRADUATE SCHOOL

MONTEREY, CALIFORNIA

MBA PROFESSIONAL PROJECT

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December 2019

By: **Amanda B. Kingery**
Heather K. Lee

Advisor: **Nicholas Dew**
Co-Advisor: **Jesse Cunha**

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REPORT DOCUMENTATION PAGE	*Form Approved OMB No. 0704-0188*

1. AGENCY USE ONLY *(Leave blank)*	**2. REPORT DATE** December 2019	**3. REPORT TYPE AND DATES COVERED** MBA Professional Project

4. TITLE AND SUBTITLE
A COST-BENEFIT ANALYSIS OF A U.S. NAVY OOCYTE CRYOPRESERVATION PROGRAM FOR FEMALE NAVAL OFFICER RETENTION

5. FUNDING NUMBERS

6. AUTHOR(S) Amanda B. Kingery and Heather K. Lee

7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES)
Naval Postgraduate School
Monterey, CA 93943-5000

8. PERFORMING ORGANIZATION REPORT NUMBER

9. SPONSORING / MONITORING AGENCY NAME(S) AND ADDRESS(ES)
N/A

10. SPONSORING / MONITORING AGENCY REPORT NUMBER

11. SUPPLEMENTARY NOTES The views expressed in this thesis are those of the author and do not reflect the official policy or position of the Department of Defense or the U.S. Government.

12a. DISTRIBUTION / AVAILABILITY STATEMENT
Approved for public release. Distribution is unlimited.

12b. DISTRIBUTION CODE
A

13. ABSTRACT (maximum 200 words)

Women are underrepresented as a percentage of the total naval force. They are not only recruited at a lower percentage than men but they are also retained at a lower level—nearly 30% fewer women than men remain in naval active service beyond the 10-year mark, as noted by former Secretary of Defense Ash Carter during a 2016 Force of the Future Reforms press briefing. A major contributing factor in both the lower recruiting and retention rates is the perception of a conflicting interest between naval service and starting and raising a family.

In this study, we explore the costs and benefits of the U.S. Navy adopting a policy to allow women within the naval service to take advantage of oocyte cryopreservation (OCP, or "egg freezing") as a tool to increase female officer retention. We also examine public companies that have already implemented OCP programs to the benefit of their female employees, analyze the impact women have on organizational performance, review ethical and religious outlooks toward OCP, examine the costs associated with the procedure, and attempt to estimate how much this policy change would cost the U.S. Navy.

We conclude that the Navy could benefit greatly from the implementation of an OCP program: in general, it is more cost-effective for the Navy to pay for OCP, as OCP is cheaper than recruiting and retraining replacement personnel.

14. SUBJECT TERMS	**15. NUMBER OF PAGES**
female, retention, recruitment, oocyte, cryopreservation, egg, freezing, family, in vitro fertilization	99
	16. PRICE CODE

17. SECURITY CLASSIFICATION OF REPORT	**18. SECURITY CLASSIFICATION OF THIS PAGE**	**19. SECURITY CLASSIFICATION OF ABSTRACT**	**20. LIMITATION OF ABSTRACT**
Unclassified	Unclassified	Unclassified	UU

NSN 7540-01-280-5500

Standard Form 298 (Rev. 2-89)
Prescribed by ANSI Std. 239-18

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Amanda B. Kingery, Lieutenant, United States Navy
Heather K. Lee, Lieutenant Commander, United States Navy

Submitted in partial fulfillment of the
requirements for the degree of

MASTER OF BUSINESS ADMINISTRATION

from the

NAVAL POSTGRADUATE SCHOOL
December 2019

Approved by: Nicholas Dew
Advisor

Jesse Cunha
Co-Advisor

Amilcar A. Menichini
Academic Associate, Graduate School of Defense Management

Don E. Summers
Academic Associate, Graduate School of Defense Management

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LIST OF ACRONYMS AND ABBREVIATIONS

ADSM	Active Duty Service Member
ART	Assisted Reproductive Technology
ASRM	American Society for Reproductive Medicine
CDC	Center for Disease Control
CDC	Child Development Center
CIP	Career Intermission Program
DMDC	Defense Manpower Data Center
DoD	Department of Defense
DoN	Department of the Navy
EFM	exceptional family member
FCC	Family Child Care
FY	fiscal year
IVF	in-vitro fertilization
MTF	Military Treatment Facility
NCBC	National Catholic Bioethics Center
NCWIT	National Center for Women and Information Technology
OCP	Oocyte Cryopreservation
SART	Society for Assisted Reproductive Technology
SECDEF	Secretary of Defense
STEM	Science, Technology, Engineering and Mathematics
U.S.	United States
USC	University of Southern California
WRNMMC	Walter Reed National Military Medical Center

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EXECUTIVE SUMMARY

Since the late 1940s, women have become increasingly active in the U.S. labor force, making up nearly 47% of it in 2018, with women of prime child bearing age comprising 15% of the total force (United States Department of Labor, 2019). Many companies have begun to leverage women and their unique leadership capabilities within their organizations. The Department of the Navy (DoN) has taken advantage of this force multiplier, with women rising to the highest levels of uniformed service and serving as some of our most transformative leaders: Rear Admiral Grace Hopper, known as the mother of computing for her contributions to revolutionizing computers, and Admiral Michelle Howard, the first woman in U.S. Naval History to attain the rank of a four-star flag officer are just two of the many women who have made significant and lasting impacts on U.S. naval history.

However, women are still underrepresented as a percentage of the total DoN force, representing only 19.6% of the active duty component as of August 2019 (Defense Manpower Data Center, 2019). Not only are women recruited at a lower rate than men but they are also retained at a lower rate. Nearly 30% fewer women than men remain in DoN active service beyond their 10-year mark. A major contributing factor in both the lower recruiting rate and the decreased retention rate is the perception of a conflicting interest between Naval service and starting and raising a family (Department of Defense, 2016).

This study conducts a deep dive into the potential benefits of the United States Navy adopting a policy to allow women within the naval service to take advantage of oocyte cryopreservation (OCP). Improvements in medical technology over the last decade have allowed for women's eggs to be harvested and cryogenically stored for future use via in vitro fertilization (IVF). This process permits women to delay when they choose to start a family, allowing for career aspirations to take precedence over their biological clock while preserving their fertility.

Some public companies have already started implementing OCP programs to the benefit of their female employees, their families, and the company itself. Tech companies implementing OCP programs are of particular interest because—similar to the Department of Defense (DoD)—the tech industry struggles to recruit and retain female employees. Several Silicon Valley tech giants have implemented OCP/IVF policies which allow their female employees to focus on their work at critical times in their career development (Carpenter, 2017). In doing so, these companies are able to retain these employees, along with their leadership skills and experience, while reducing stress on their family and work lives. These tech giants, such as Apple, Google, Facebook and others, potentially provide a template for how to build a successful OCP program that benefits both the women in the Navy and the Navy as a whole.

As part of this study, we conducted a review of several ethical and religious outlooks towards OCP in order to gain a deeper understanding of the opinions taxpayers could hold towards the implementation of such a policy. We learned that there are many viewpoints and none of them are conclusively right or wrong. Rather than attempt to follow one specific ethical framework or the moral guidelines of one specific religion, a better plan may be aimed at developing a moderate program which finds acceptable middle ground for the most viewpoints. We believe this is viable, and would enable the Navy to enact a policy which will do the most good for individuals who choose to partake in it while providing the most benefit to the Navy.

We then examine the costs associated with the OCP procedure and attempt to form an accurate representation of how much such a policy change would cost the DoN. To show the relative cost of implementing an OCP program, we compared it to the cost of retraining naval officers at a time when they are most likely to leave naval service. While the average cost of providing OCP/IVF to a service member through a military treatment facility (MTF) is approximately $27,000, the cost of retraining a Navy service member is $39,000 at a minimum (Bo, 2013). This suggests the Navy would save money by offering OCP.

After reviewing the possible costs and benefits, we recommend that the DoN strongly consider developing and promoting an OCP program. Utilizing this program as a retention tool, the Navy will be able to harness talented and experienced female naval personnel who might otherwise depart the Navy to start a family. This program has the potential to save substantial retraining costs for a small increase in medical costs. A service commitment attached with the procedure in addition to some limitations would minimize abuse of the program and ensure retention to pay back the Navy for the OCP costs it incurred. In this way, the Navy can retain talent while bolstering the quality of life of its female Sailors.

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ACKNOWLEDGMENTS

First and foremost, we would like to thank our families for their unwavering support throughout our time at the Naval Postgraduate School—without them, none of this would have been possible.

We would like to extend our deepest gratitude to our advisor, Nicholas Dew, for his guidance and, most of all, patience as we worked through our project. Thank you for helping us “get to the finish line.”

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I. INTRODUCTION

A. BACKGROUND

The weakened economy and shrinking civilian labor market caused by the 2008 economic recession in the United States DoD in a unique and unprecedented position for talent retention and recruitment. The fiscal year (FY) 2014 Population and Representation in the Military Services report noted that from FY 2009 to FY 2013, the unemployment rate for 16-to-24-year-old women ranged from 15.5 percent to 18.4 percent (Office of the Undersecretary of Defense, Personnel and Readiness [USD(P&R)], 2014). This high unemployment rate helped the DoD regularly meet its enlistment goals by making service in the military a more attractive employment option.

The recruiting environment was so favorable that a 2015 report from the Office of the Under Secretary of Defense, Personnel and Readiness (USD(P&R)) stated that "the recruiting environment has allowed recruiters to be increasingly selective, so the quality of newly enlisted accessions is higher than ever before" (p. 2). The FY 2016 report by the same name stated that even though unemployment rates were dropping, the labor force participation rate was at a 30-year low and thus, recruiting numbers were increasingly harder to meet as the labor market continued to improve. This trend coupled with other recruiting complications, such as high school graduates being more likely to enroll in college immediately upon graduation or DoD budget constraints leading to reductions in military pay, resulted in the military being a less attractive career path for younger Americans (USD(P&R), 2016). A September 2017 Military Officers Association of America article simply stated the recruiting environment the American military is currently facing—of the approximately 20 million 17–21-year-olds in America, only about 4.4 million of them meet overall eligibility requirements for military service. Of those 4.4 million, when accounting for actual propensity to join, only about 465,000 are truly potential recruits and of those 465,000, the DoD needed over half of them per year to meet its recruitment goals.

While the DoD is finding it increasingly difficult to meet overall recruitment goals, they are facing an even tougher challenge with the attraction and retention of female recruits: "Relative to their representation in the civilian labor market, women are underrepresented in the military, making up 15.6 percent of the AC [active component] military population in FY15" (USD(P&R), 2016, p. 4). In an effort to combat this trend, then Secretary of Defense (SECDEF) Ashton Carter announced at a 2016 press briefing a set of initiatives focused on strengthening support provided to military families in an effort to improve quality of life. The initiatives focused on "family issues that impact three critical areas for the force of the future: recruiting, retention, and career and talent management" (Department of Defense [DoD], 2016, para. 13). SECDEF Carter went on to note that one of the biggest stressors on military families include having and raising children, emphasizing his point by stating that "at 10 years of service, when women are at their peak years for starting a family, women are retained at a rate 30 percent lower than men across the services … work and family conflict is one of the primary reasons they report leaving service" (DoD, 2016, paras. 17–18).

B. PURPOSE

The goal of this thesis is to explore potential costs and benefits associated with offering OCP, or "egg freezing," as an incentive to female naval officers to "stay Navy." Similar programs have recently been implemented within civilian organizations to attract and retain female talent. This thesis also examines the financial losses incurred by the Navy due to female attrition and whether offering OCP as an incentive could either offset or decrease those losses. While it is important to identify all issues that cause women to exit naval service, it is also essential to address the unique and complicated issue that is routinely highlighted as a leading factor of departure—the conflicting priorities women face regarding their careers and starting a family.

C. ORGANIZATION OF STUDY

Chapter II discusses the evolution of, science behind, and costs of OCP. The chapter also explores the societal shift behind why more and more women are opting to

forgo starting families to instead focus on advanced education or career opportunities and the effects this can have on female fertility. Chapter II also touches upon how female service members most fertile years are often spent establishing themselves and their careers within the military.

Chapter III reviews currently available benefits and programs already in place aimed at supporting military families, either at the onset of their family planning or as assistance for established families. The chapter also discusses new initiatives being considered to strengthen support provided to military families in an effort to improve quality of life.

Chapter IV examines the parallels between the DoD and the technology sector with regard to the recruitment and retention of talented women. The chapter also highlights the efforts the tech-industry has taken to incentivize more women to join their ranks and to encourage them to stay once they are there.

Chapter V looks at why organizations should concern themselves with working towards gender parity. The chapter aims to discuss what contributions women leaders bring to the table that could give the Navy a competitive advantage in today's operating environment.

Chapter VI discusses different ethical frameworks and their application to different ethical debates surrounding offering OCP as a benefit to female active-duty service members (ADSMs). The chapter also discusses how prominent religions within the U.S. and military demographics may view the debates and whether they align with or differ from the ethical frameworks.

Chapter VII presents an analysis of the costs and benefits of implementing an OCP program.

Chapter VIII concludes the study with our recommendation to the Navy on the implementation of an OCP program.

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II. WHAT IS OOCYTE CRYOPRESERVATION (OCP)?

The preservation of human fertility has been in practice since the 1950s, beginning with the freezing of sperm from males undergoing cancer treatment. However, female fertility preservation did not come about until almost thirty years later when Dr. Christopher Chen of Singapore was the first to successfully freeze a human egg (Advanced Centre for Reproductive Medicine, n.d.). Since then, the practice of OCP has developed significantly and in 2013, the American Society of Reproductive Medicine removed the label of "experimental" from the egg freezing procedure (Doheny, 2014).

More commonly known as "egg freezing" or "egg banking," OCP is the practice of harvesting and extracting a female's oocytes or "eggs" for freezing. When the OCP patient is ready to be inseminated, her eggs are thawed for fertilization and implantation in her uterus via in IVF. The OCP process begins with an evaluation of the reproductive health of a prospective candidate, with hormone injections being used to stimulate the ovaries. Because a woman generally only produces a single egg per month, hormone injections are used to coax her ovaries into producing multiple eggs in order to increase the odds of a successful harvest and extraction. The medication also helps ensure that eggs are not released until the doctor performing the OCP harvesting procedure is ready for them (Reproductive Science Center, n.d.). During this period, patients are required to make frequent visits to their doctor's office for ultrasounds to monitor their ovaries' production (McHaney, 2014). Every patient reacts differently to the hormone treatments; therefore, the number of hormone injections may vary and could last for up to two weeks (University of Southern California Fertility, n.d.-a).

Considered minor outpatient surgery, the patient is put under light anesthesia and a doctor uses an ultrasound probe to direct a needle with a suction device into the woman's ovary to harvest mature eggs. The process takes approximately 10 minutes and is akin to the IVF process (McHaney, 2014). Once oocytes are retrieved, they are stored at -196 degrees Celsius until the patient is ready to retrieve, fertilize, and implant the egg through conventional IVF processes (University of Southern California Fertility, n.d.-a). It is not uncommon for women who have had their eggs frozen to use a surrogate if they

are unable to carry a child themselves. According to the University of Southern California (USC) Fertility Center, a woman should pursue OCP during her most reproductively fertile years, which are her 20s and 30s (University of Southern California Fertility, n.d.-b).

USC Fertility Center research studies have shown that frozen eggs have a success rate of 75% for both thawing and fertilization. Because of this, it is recommended that a minimum of ten eggs per desired pregnancy be stored for future use. Ten eggs are recommended for each pregnancy attempt and women can expect approximately 10 to 20 eggs from one harvesting cycle (University of Southern California Fertility, n.d.-a).

The motives for oocyte freezing are varied but leading reasons include: cancer patients concerned that chemotherapy will affect their ability to conceive in the future, women who have had difficulties with fertility in the past, or, more recently, women who want to increase their options for conception no matter what their age (McHaney, 2014).

A. SOCIAL NORMS AND OCP

Evident by the growing number of women in the workforce, social norms have been changing and women are having children later in life than in prior generations—more than 50% of the U.S. population is comprised of women and of that, 44% of the total female working age population are part of the U.S. labor force (USDoL, 2019). Since 1948, the number of women in the workforce has almost doubled. In 2015, 46.8% of the total U.S. labor force was comprised of women and 56.7% of the total female working age population participated in the U.S. labor force. In that same year, 73.4% of all women between the ages 25 to 34 and 74.3% of women between the ages of 35 and 44 were either employed or actively looking for work (United States Department of Labor, 2015).

With the shift in societal norms, more women are opting to forgo starting a family to instead focus on advanced education or career opportunities; opportunities that usually present themselves during a woman's most fertile years in her 20s and 30s (Ava Science Inc, n.d.). Research has shown that as women progress in age their eggs diminish not only in quantity but in quality as well. OCP has become an attractive alternative to many

wishing to preserve their ability to start a family in the future. Statistics show that at around the age of 32, a woman's probability of natural conception decreases gradually but significantly. By the age of 35, the rate of fertility decline hastens and by the age of 40 fertility has decreased by half (Your Fertility, n.d.). The dramatic decrease in a woman's fertility as she advances in age has only increased the attractiveness of OCP, especially since studies have shown that "There is a critical relationship between the age of the egg and successful conception and pregnancy" (Goold & Savulescu, 2009, p. 48). The age of a woman's egg being the vital element in successful conception and pregnancy was demonstrated by "recent successful pregnancies in women over the age of sixty, all of whom used younger donor eggs" (Goold & Savulescu, 2009, p. 48).

A 2014 Center for Disease Control and Prevention (CDC) study looked at live birth rates in the years 1970, 2000, and 2012 for women aged 35 to 39 and 40 to 44, and found that first-time mothers in each age bracket had steadily increased per 1,000 women (Mathews & Hamilton, 2014). In 1970, in the 35 to 39 age bracket, approximately 6.7 of every 1,000 women were having their first child. That figure increased to 8.9 in the year 2000 and then to 11 by 2012. Although the data for women between the ages of 40 to 44 did not increase as significantly, it was still noted to be on the rise (Mathews & Hamilton, 2014). The CDC attributed their findings to older first-time mothers being more financially stable than their younger counterparts (Mathews & Hamilton, 2016). The National Center for Health Statistics conducted a study similar to the CDC's, looking primarily at women between the ages of 30 to 35. Their study, which looked at the years 2000 to 2014, found the median age for first births increased by 28%. For women over the age of 35, the median age rose by 23% (Mathews & Hamilton, 2016). Comparisons between the two studies show that societal norms are changing and the median age for first-time mothers is rising more rapidly than in the past. While the average age for first time mothers is still under 30, the demographics and social patterns of women in the U.S. is changing, which is evident by the number of women in the workforce and the increase in birthrates for women over the age of 35.

As a subset of the U.S. female population, female service members are not immune to the dilemma of choosing between advancing their careers or starting families.

With some exceptions, most officers start their military careers at approximately 22 years of age because they require a bachelor's degree prior to commissioning. After initial specialty training and completion of their first tour assignment, female officers may find themselves in their mid-to-late 20s and still no closer to starting a family than they were upon accession. For enlisted members across the services, the bulk of accessions for both males and females occurs between the ages of 17 and 20 since possessing a bachelor's degree is not a prerequisite (USD(P&R), 2014). After graduating from boot camp and subsequent completion of their specialty training and first tour assignments, enlisted females may be only slightly younger than newly commissioned officers, but still not ready to start a family. Similar to their civilian counterparts, female service members often spend their most fertile years establishing themselves and their careers within the military.

As of August 2019, the Defense Manpower Data Center (DMDC) reports that females, excluding Midshipmen, comprise approximately 19.6% of the active duty military population in the Navy—10,720 officers and 54,611 enlisted members (Defense Manpower Data Center, 2019). Working under the assumption that the majority of female naval officers in the paygrades O-1 through O-4 and the majority of female naval enlisted personnel in the paygrades E-3 through E-7 are between the ages of 20 and 35, the prime age range for OCP candidates, approximately 57,476 female Navy service members could reasonably consider OCP as a fertility preservation alternative (Defense Manpower Data Center, 2019).

B. THE COST OF OCP

The average cost of OCP is approximately $8,000 to $10,000, not including the medications and hormones required pre and post procedure. Depending on the responsiveness of the patient to medications, required prescriptions can cost an additional $3,000 to $5,000 (McHaney, 2014). Once oocyte harvesting is completed, the preservation and freezing of the oocytes can be anywhere from $500 to $1,000 per year (Reproductive Science Center, n.d.).

When a woman is ready to begin her family using her previously frozen eggs, she must work with a fertility clinic to undergo the IVF process. IVF involves thawing and fertilizing her eggs, culturing the newly formed embryos, and transferring them to her uterus. The fees associated with this process at clinics like the Advanced Fertility Center of Chicago can cost around $6,000 per cycle (Advanced Fertility Center of Chicago, n.d.). It should be noted that the rate of success for a live birth after only one IVF cycle is relatively low at 33%. However, that rate increases to 70% for women who undergo three cycles (Advanced Fertility Services, n.d.). The total cost for three IVF cycles using previously frozen eggs that have been frozen for ten years can range anywhere between $34,000 and $43,000 in 2018 dollars.

With the advancement of medical technology and shifts in societal norms, OCP has become an appealing alternative for women looking to extend their “biological clock.” This is shown clearly by the growing number of women taking advantage of the opportunities presented by OCP. The number of women opting for OCP grew by more than 40% between 2014 and 2017 suggesting that more women are placing increasing value on preserving their fertility (Society for Assisted Reproductive Technology [SART], 2019).

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III. MILITARY FAMILY PLANNING AND SUPPORT BENEFITS

In an effort to combat the downward trend of female retention in the Navy, then SECDEF Ashton Carter announced in 2016 a set of initiatives focused on strengthening support provided to military families in an effort to improve quality of life (DoD, 2016). The initiatives included increasing paid maternity leave from six to 12 weeks, which put the DoD amongst the top tier of institutions nationwide. He acknowledged, however, that the 12 weeks he was announcing was six weeks less than the 18 weeks the Navy was previously pursuing for its Sailors. His second initiative focused on improving accessibility to child care aligning with the long work hours faced by service members. Based on feedback from surveys and pilot programs, the initiative would increase child care access to 14 hours a day, which Carter hoped would show that "supporting a family and serving our country are by no means incompatible goals" (para. 35).

A third initiative was making workplaces more accommodating for breastfeeding mothers by mandating that a mother's room be made available at facilities with greater than 50 women (DoD, 2016). Carter's fourth initiative aimed to help families facing difficult geographic situations, such as those with exceptional family members (EFM) who need to remain at specific locations for specialized high-quality medical care. The final initiative announced by Carter focused on fertility preservation, more specifically the freezing of sperm and eggs. Carter noted that:

> As a profession of arms, we ask our men and women to make incomparable sacrifices. We ask them, potentially, to place themselves at risk, of sacrificing their ability to have children when they return home. We can help our men and women preserve their ability to start a family, even if they suffer certain combat injuries. That's why we will cover the cost of freezing sperm or eggs through a pilot program for active duty service members – a benefit that will help provide men and women, especially those deployed in combat, with greater peace of mind. (DoD, 2016, paras. 42–43)

He acknowledged that service members often have difficulties finding the right time in their careers to start a family and that this benefit would provide them greater flexibility (DoD, 2016). This view was reinforced by studies conducted by the Navy between 2003 and 2008 which showed that retention among the Surface Warfare community "pointed

to an inability to address personal and family needs, especially among female service members" (Panzino, 2017, para. 7). However, by July 2016 the DoD's cryopreservation program was put on hold and in December 2017 the program was officially cancelled.

Outside of the initiatives announced by Carter, the U.S. military has a range of benefits and programs already in place aimed at supporting military families, either at the onset of their family planning or as assistance for established families. For example, the DoD covers or discounts some of the expenses associated with IVF and funds the Career Intermission Program (CIP), the military child care programs, and the EFM programs.

A. IN VITRO FERTILIZATION (IVF)

Military-provided insurance coverage for service members and their families, known as TRICARE, covers limited assisted reproductive services under certain situations. Though TRICARE does not insure the actual artificial or intrauterine insemination process, they do cover the diagnosis and treatment for an illness or injury of the male or female reproductive system to include the correction of any physical cause of infertility (Tricare, n.d.). However, coverage is only offered if the services are deemed medically necessary and combined with natural conception. While TRICARE does not cover the IVF procedure, there are six MTF that conduct IVF medical training programs in conjunction with civilian partners. Participating MTF include: Wilford Hall in San Antonio, Texas; Tripler Army Medical Center in Honolulu, Hawai'i; Walter Reed National Military Medical Center in Bethesda, Maryland; Naval Medical Center in San Diego, California; Madigan Army Medical Center in Tacoma, Washington; and Womack Army Medical Center in Fayetteville, North Carolina.

Service members and their spouses can certainly benefit from these programs. Often costs at MTFs are considerably less than those found in the commercial sector, which ranges from $12,000 to $15,000 for a basic IVF cycle (Internet Health Resources, n.d.). IVF conducted at a MTF has an estimated cost of $5,000 per couple, per IVF cycle; however, if a service member is considered seriously ill or has an injury which affects fertility, "there is no out-of-pocket cost in either the MTFs with assisted reproductive technology (ART) infertility services or in the purchased care network" (Office of the

Secretary of Defense [OSD], 2015, p. 14). A 2015 SECDEF report to Congress stated that the DoD allocated over $37 million dollars between FY's 2010 and 2014 towards infertility programs "for seriously ill or injured active duty service members and their lawful spouses" (OSD, 2015, p. 11). This included medicines, laboratory services, and reproductive services performed at MTFs in addition to funds allocated for purchasing civilian care.

While IVF can be performed at MTFs, it still requires additional out-of-pocket expenses be paid by the beneficiary outside of the actual IVF cycle costs. For example, travel funding for active duty personnel is determined by the service member's command and typically funded in one of three ways: funded orders, no cost temporary additional duty or temporary duty orders, or regular leave. However, lodging during all consultation visits and during the treatment cycle is the sole responsibility of the patient. Most medications needed during the treatment cycle are provided by the MTF at no cost (Assisted Reproductive Technology [ART] Institute of Washington, 2017).

The services provided "in-house" at each MTF vary; however, in cooperation with their civilian partners, the complete array of ART services are offered (OSD, 2015). The process to receive IVF at an MTF can be lengthy and comes with some restrictions. For example, to receive treatment at Walter Reed National Military Medical Center (WRNMMC) a consult letter must be sent by the service member's primary care physician or infertility specialist to the IVF clinic at Walter Reed (ART Institute of Washington, n.d.-b). Once the consultation letter is received, processed, reviewed by a WRNMMC staff physician and the IVF candidate is accepted, candidates must attend an orientation and complete additional laboratory tests prior to obtaining a start date in the WRNMMC program. In addition, any sperm used during the IVF process must be assessed for efficacy. Prior to starting the IVF treatment cycle, everyone is required to participate in an injection teaching class at WRNMMC (ART Institute of Washington, n.d.-b). The actual IVF treatment cycle duration itself varies by patient, but at WRNMMC it typically lasts a total of three weeks (ART Institute of Washington, n.d.-a). In addition to the previous requirements listed, IVF candidates must also: must be less

than 42 years of age at time of cycle start, have a body mass index of less than 40 and, have a follicle-stimulating hormone of less than 12.

B. CAREER INTERMISSION PROGRAM (CIP)

CIP is another program available to service members looking for a way to start a family without restricting their career opportunities. The Navy established its CIP in 2009, allowing active-duty service members to transition to the Individual Ready Reserve for up to three years to enable them to pursue personal endeavors such as starting a family. Upon completion of the program, Sailors transition back to active duty, owing a two-for-one service obligation for each year spent in the CIP (Chief of Naval Personnel Public Affairs, 2017).

The Navy adopted the intermission program in order to increase retention rates and persuade talented individuals contemplating exiting naval service not to. Deputy Chief of Naval Operations for Manpower, Personnel, Training, and Education, Vice Admiral Robert Burke states, “We have been working hard to develop modern personnel policies like CIP that offer flexibility and choice with an effort called Sailor 2025. We must continue to find better ways to retain and repurpose the talent in which we have already invested, and avoid incentivizing Sailors to walk out the door” (Chief of Naval Personnel Public Affairs, 2017, para. 9). As of January 2017, the program had a total of 127 participants. The Army, Air Force and Marine Corps also offer their own versions of CIPs to their respective service members.

C. MILITARY CHILDCARE PROGRAMS

For those service members with established families, the military also offers child care options on installations worldwide. Childcare programs available to service members include Child Development Centers (CDC), Family Child Care (FCC), and School-age Care Programs.

CDCs are generally available to service members for childcare Mondays through Fridays and some locations offer extended hours, weekend care, and respite care which helps some families better handle their work-life balance. CDCs are certified by DoD and

accredited by a national accrediting body, such as the Council on Accreditation (Military One Source, 2017). The DoD also offers the option of private home childcare through their FCC program. Care is received in the private home of a certified provider who either lives in government owned or leased housing. In some cases, care may also be provided in a state-licensed home in the community (Military One Source, 2017). Caregivers offering their services through this program must be certified to operate by the installation they are associated with and may choose to individually seek national accreditation from the National Association of Family Child Care (Military One Source, 2017). The DoD's third childcare option comes in the form of their SCPs for children in kindergarten through sixth grade. Before and after school care is available, in addition to care on non-school days and summer vacations. SCPs are DoD certified and accredited by a national accrediting body (Military One Source, 2017).

D. EXCEPTIONAL FAMILY MEMBER (EFM) PROGRAM

The –DoD-wide EFM program offers support and assistance to military personnel with special needs family members. Although each service has their own EFM program, they all provide the same essential functions of support and assistance. In FY 2011, the DoD and Military Departments spent approximately $30.5 million supporting the 128,500 family members enrolled in the program (Exceptional Family Member Program, 2015).

The Navy's EFM program emphasizes assistance in the assignment process to ensure that Sailors are not assigned to locations that lack adequate medical and educational resources for their family member. "Liaisons are located throughout the fleet to provide information and referrals, individualized service plans, and case management from one duty station to the next" (Navy Personnel Command, n.d., para. 1).

E. SUMMARY

The DoD's desire to attract, recruit, and retain capable individuals is becoming increasingly difficult due to shrinking talent pools and a constrained budgetary environment. The initiatives outlined by former SECDEF Carter are evidence that all branches of the military are looking for new and innovative ways to appeal to a changing

and limited demographic that has growing employment options thanks to strong economic conditions. The current DoD initiative to increase troop strength from a reduced pool of eligible candidates should drive the DoD to focus its limited resources on the recruitment and retention tools that are most effective for the targeted demographics, such as pay, educational opportunities, and a sustainable work-life balance.

IV. WOMEN IN SILICON VALLEY

The DoD is not the only organization finding it increasingly difficult to attract, recruit, and retain talented women. A 2016 report published by the National Center for Women and Information Technology (NCWIT) studied the number of women in the high-tech industry and found that though women held 57% of all professional occupations in 2015, they accounted for only 25% of all high-tech computing-related occupations, a figure that has been steadily declining since a 36% peak in 1991 (Ashcraft, McLain, & Eger, 2016). Tech giants such as Google, Facebook and Apple are approximately 60% to 70% male, with that figure nearing 80% for leadership roles and 85% in technology-specific leadership roles (Ashcraft et al., 2016).

Similar to the DoD, the exit rate of women in high-tech industries is more than double that of men—41 and 17 percent respectively (Ashcraft et al., 2016). The NCWIT study noted that of the 41% of women who exited their career field, 20% left in order to take time out of the workforce. Though their research suggested that women departing the technology industry were not primarily leaving due to family concerns, those that did "might have made different choices if more flexible options to support these competing responsibilities had been available" (Ashcraft et al., 2016, p. 11). A separate report conducted that same year from the U.S. Equal Employment Opportunity Commission (2016) stated that the loss of women in the high-tech industry is attributed to several factors including an "inhospitable work culture, isolation, conflict between women's preferred work rhythms and the 'firefighting' work style that is generally rewarded in high tech, long hours and travel schedules that conflict with women's heavy household management workload, and women's lack of advancement in professional and corporate ladders" (para. 31).

The benefits of a more gender-diverse workforce—such as higher levels of innovation, improved problem solving, and increased creativity—are not lost on the high-tech industry. This had led them to increase their efforts in incentivizing more women to join the industry and further, to encourage them to stay once they are there. The parallels between the DoD and technology sector in these regards makes it worthwhile to

investigate how some of these companies are working to variegate their ranks. DoD can benefit from lessons learned and from acquiring a better understanding of its recruiting competition.

A. GOOGLE

Founded in 1998 by Sergey Brin and Larry Page, Google is the number one search engine around the world, with a single share of stock valued at over one-thousand dollars. The company itself has become so tightly woven into the fabric of everyday culture that the name Google itself has become a verb. Even with its popularity and cultural significance, Google is not immune to the gender disparity plaguing Silicon Valley. In 2017, Google's overall global employment was predominately male, with 69% of its workforce comprised of men. That gap becomes even more apparent within its engineering and leadership ranks, being 80% and 75% male respectively (Google, n.d.-a).

The imbalance within the company is not lost on Google which is why it commissioned a diversity sector committed to improving diversity and inclusion at the company. Noting that these values are critical to its success and future innovation, the organization is working to challenge bias both within and outside of the company (Google, n.d.-a). Nested within its diversity sector is "Women@Google," a global employee network "committed to empowering women at Google by connecting, developing, and retaining female talent" (Google, n.d.-b). The network's purpose is to provide female employees across 45 countries networking, professional development, and mentoring opportunities.

There was a point in Google's history where the exodus of women from the company was affecting the organization's financial performance – "Google fights for potential workers with Apple, Facebook, Amazon, Microsoft, and hordes of startups, so every employee's departure triggers a costly, time-consuming recruiting process" (Manjoo, 2013, para. 1). When the company dug into why female employees were leaving at such rapid rates, they found that new mothers were departing the company at twice the average departure rate (Manjoo, 2013, para. 3).

At the time of the discovery, Google's maternity leave plan was set at the industry standard of 12 weeks of paid time off after delivery. In 2007, Google decided to change its maternity leave plan in an effort to persuade new mothers to stay with the company. The revamped plan boasted 18 weeks of paid maternity leave and if child-delivery complications were experienced, mothers were authorized 22 weeks (Grant, 2015). Leave didn't have to be taken consecutively either – "they were allowed to split up that time however they wished, including taking some of that time off just before their due date … a new mother can take a couple months off after birth, return part time for a while, and then take the balance of her time off when her baby is older" (Manjoo, 2013, para. 4). A spokesperson for Google noted that the change in the company's policy was better informed by science, "Twelve-week-olds are at a very different place developmentally than are 18-week-olds, so we changed our maternity leave to 18 weeks. It just felt like the right thing to do. After our policy change, we also found that returning moms left at half the rate they were leaving at previously" (Grant, 2015, para. 9).

In addition to its revamped maternity leave policy, Google also began offering egg-freezing in its benefits package after 2014. Though it comes with some restrictions, such as limiting the clinics in which beneficiaries can obtain services, the aim of the policy was to give women the ability to compete with their male co-workers on a more even playing field when it comes to balancing family and life pressures, especially since men are not faced with the same time restrictions on reproduction as women are. Another family planning tool offered to Google employees is $75,000 in IVF benefits, including three IVF cycles and preimplantation genetic screening.

In her 2015 article *Silicon Valley's Best and Worst Jobs for New Moms (and Dads),* author Rebecca Grant notes that on top of updating their maternity leave plan and egg-freezing perks, Google also offers employees a number of other family-friendly incentives such as discounts for nanny-placement agencies, high-quality children's centers located near their corporate headquarters, on site "mother's rooms," and $500 to help offset costs for newborn needs (Grant, 2015). Grant goes on to say that Google's hopes are that an easier life for working parents will equate to a more productive workforce that will in turn boost Google's bottom line.

B. FACEBOOK

Developed in 2004 by Mark Zuckerberg, Facebook is a U.S.-based online social network that boasts an average of 1.47 billion users daily. Headquartered in California, the company has upward of 30,000 employees spanning 43 locations around the globe (Facebook, n.d.-a). The company's 2018 Diversity Update showed that women comprised only 36% of their global workforce with only 21%, working within their technical sectors. Their senior leadership ranks reflect the same disproportion, with 70% of leadership positions being held by men (Facebook, n.d.-b). Similar to other tech giants in Silicon Valley, Facebook finds themselves struggling to attract and retain women within their organization.

Facebook's Global Director of Diversity, Maxine Williams noted that "With a global community of over 2 billion people on Facebook, the case for a more diverse and inclusive company is clear. Diversity helps us build better products, make better decisions and better serve our community" (Williams, 2017, para. 1). To aid in diversification efforts, Facebook highlights three programs in particular—their "Diverse Slate Approach" and "Managing Unconscious Bias" classes and Facebook University. Introduced in 2015, the Diverse Slate Approach "sets the expectation that candidates from underrepresented backgrounds will be considered when interviewing for open positions" (Williams, 2017, para. 5). The company's Managing Unconscious Bias class is a two-tiered program which not only "trains managers to understand the issues that affect marginalized communities … which gives everyone the common language, tools and space to practice supporting others" (Williams, 2017, para. 6). Lastly, in 2013, the company started Facebook University in an effort to "increase access and opportunity for students with an interest in software engineering, business and analytics" (Williams, 2017, para. 7). Williams comments that the intended purpose of the program is to cultivate college students from "underrepresented sectors" in the early stages of their post-secondary education in the hopes that graduates will return to Facebook for internships and full-time jobs.

While the number of overall women at Facebook has increased five-times over the last five years with a seven-time increase in women in technical fields, Facebook realizes “it’s not enough to simply show up at colleges and universities” (Williams, 2018, para. 10). Facebook has also implemented a number of program and policies aimed directly at the female demographic in an effort to more actively recruit and retain women within their ranks. Like Google, Facebook’s maternity leave program is above the U.S standard and offers four months of paid leave for new mothers (Hatmaker, 2017). The company also offers support for family planning including adoption and surrogacy assistance, $100,000 towards four cycles of IVF and preimplantation genetic screening, in addition to a lump sum of $4,000 to help with newborn expenses (Grantham, 2018). Like Google did in 2014, Facebook also began covering OCP for non-medical reasons the same year “making it one of the first major employers in the technology sector to do so” (Farr, 2014, para. 3).

In a 2015 interview with Bloomberg Television, Facebook’s Chief Operating Officer, Sherly Sandberg, explained how the genesis of the company’s egg-freezing policy started with a female employee’s battle with cancer. The employee’s cancer treatment would leave her unable to bear children unless she took preventative measures prior to treatment. Sandberg went on to explain that at the time, Facebook’s medical care would not cover egg-freezing. After discussing the employee’s dilemma with Facebook’s Human Resources head, Sandberg decided that not only should the company cover egg-freezing for women with cancer but that they would offer the benefit more broadly to female employees as a whole (Bloomberg, 2015).

C. APPLE

The famed Apple Inc, a company known worldwide for its cutting-edge technology and products, was founded in April 1976 by Steve Jobs and Steve Wozniak. The products developed and sold by the tech giant for over 40 years have propelled the company to become the first American public company to surpass $1 trillion in value (Heath, 2018). Even with the fame, allure, and value of the Apple brand, the corporation finds themselves in company with its Silicon brethren when it comes to a disparity in

gender diversity. As of 2017, the global gender make-up of the organization was still predominately male, with only 32% of its workforce being women, falling to 23% for women in tech-specific jobs. In the company's senior leadership positions, 71% are held by men, down only 1% since 2014 (Apple, 2018).

As a company that prides itself on innovation, it notes that diversity is what continues to make that innovation possible (Apple, 2018). In a 2017 interview, Apple's Chief Executive Officer Tim Cook stated that he was "disturbed" by the gender disparities in the Science, Technology, Engineering, and Mathematics (STEM) fields, saying that "I think the U.S. will lose its leadership in technology if this doesn't change … Women are such an important part of the workforce. If STEM-related fields continue to have this low representation of women, then there just will not be enough innovation in the United States. That's just the simple fact of it" (Williams, 2017, para. 20).

In an effort to recruit and retain more women to work for Apple, the company has instituted a number of programs and policies targeted specifically at the female demographic. In addition to an extended maternity leave policy and adoption assistance programs, in 2015 Apple began offering to pay both full and part-time employees up to $20,000 for procedure and storage costs related to egg-freezing and IVF (Farr, 2014). The company noted in a statement that these benefits were meant to empower women at Apple to "do the best work of their lives as they care for loved ones and raise their families" (Buhr, 2014, para. 4). Table 1, provided in the Appendix, illustrates how Apple's family planning benefits compare to other organizations discussed in this chapter.

D. DIVERSITY EMPHASIS IN SILICON VALLEY

While there is not enough publicly available data to support whether female-focused initiatives have significantly impacted Silicon Valley's female recruitment and retention goals, it is safe to assume that the industry considers gender diversity pivotal to its success by the emphasis being placed on it. It would benefit the Navy to take notice of this shift in mindset by one of their top competitors when it comes to the recruitment of talented females. The incentives being offered to women by companies in Silicon Valley

are becoming increasingly enticing and yet sobering expectations (such as putting their lives on the line in execution of their duties) are not placed on them as they are on women in the military.

If the Navy's desired end state is to cultivate a workforce that not only attracts but also maintains talented women, it would benefit from looking at the initiatives being enacted by their competitors for talent, such as those in Silicon Valley. By focusing their efforts on issues that have proven to matter most to the majority of women in the workforce, such as a better work-life balance, the Navy would find themselves better able to compete with the civilian sector for their targeted demographic.

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V. WHY WOMEN MATTER FOR ORGANIZATIONAL PERFORMANCE

Numerous studies have been commissioned in the civilian sector to discover and understand the different advantages having women in the workplace afford organizations, such as the 2012 study by Crisitan Dezsö and David Ross called *Does Female Representation in Top Management Improve Firm Performance?*, which found that

> Female representation in top management improves firm performance but only to the extent that a firm's strategy is focused on innovation, in which context the informational and social benefits of gender diversity and the behaviors associated with women in management are likely to be especially important for managerial task performance. (p. 1072)

Common themes in the literature show that, aside from increasing a company's available pool of candidates from which to grow their workforce, women also brought to the table a transformational leadership style that often coincided with economic gains for corporations (Desvaux, Devillard-Hoellinger, & Baumgarten, 2007). One study conducted by international management consulting firm McKinsey & Company suggests that women on management teams apply transformational leadership behaviors more often than men that have proved to improve overall corporate performance (Desvaux et al., 2007). A more recent study conducted by the same firm found that not only are "companies in the top quartile for gender or racial and ethnic diversity [are] more likely to have financial returns above their national industry medians … [but] companies in the bottom quartile are statistically less likely to achieve above-average returns" (Hunt, Layton, & Prince, 2015, p. 1).

The transformational leadership style first introduced by James MacGregor Burns, an American historian and political scientist, is a type of leadership that works through the individual to bring about change in organizations and social systems. Furthermore, "it involves shifts in the beliefs, needs, and the values of followers … the result of transforming leadership is a relationship of mutual stimulation and elevation that converts followers into leaders and may convert leaders into moral agents" (Kuhnert & Lewis, 1987, p. 648). Transformational leaders ground their leadership style in personally held

values, such as justice and integrity. By exposing their own personal ideals, these types of leaders are able to unify those they lead, often times changing goals and beliefs. Bernard M. Bass is an academic in the fields of leadership studies and organizational behavior who furthered Burns' theory and applied it to organizational management. According to Bass, transactional leadership "results in achievement of higher levels of performance among individuals than previously thought possible" (Kuhnert & Lewis, 1987, p. 650).

Though studies and reports vary on the entirety of attributes that constitute the transformational leadership style, the following four elements were consistently present throughout literature reviewed: individualized consideration, intellectual stimulation, inspirational motivation, and idealized influence (Riggio, 2014). The remainder of this chapter elaborates on these elements and investigates how these leadership traits, more often exhibited by female leaders, can positively translate to organizations such as the U.S. Navy.

A. INDIVIDUALIZED CONSIDERATION

This tenet of transformational leadership centers itself around demonstrating genuine concern for the needs and feelings of followers as individuals and developing their leadership potential on a more personal level. Individualized consideration "celebrates the individual contribution that each follower can make to the team" thus instilling self-motivation in those being led to take personal responsibility for their individual contribution towards overall organizational objectives (Langston University, n.d., p. 2).

In an organization such as the military where conformity and institutionalization is expected for reasons of unit cohesion, it might seem that individualized attention would be counterproductive to the greater whole. However, when too little emphasis is placed on the individual, it could be easy for them to feel as if their personal contributions are of little importance and personal accountability, responsibility, and motivation are left by the wayside. By focusing on the individual and highlighting their intrinsic value to the collective mission, it has the potential to inspire them to complete their assigned tasks

more effectively and efficiently, thus positively contributing to the organization's critical objectives.

B. INTELLECTUAL STIMULATION

Leaders that take risks, challenge convention, and encourage ideas and feedback from those they lead can stimulate and incite creativity in their followers. Nurturing and developing individual thinkers and affording them the latitude to ask questions, think deeply, and devise better ways to complete assigned tasks, develops personnel that are more capable of effectively handling problems presented to them (Langston University, n.d.).

This type of leadership is essential in today's operational environment where potential adversaries are no longer operating within previously defined constructs. The DoN's 2018 report *Education for Seapower* reinforces this by stating:

> In fact, the character of war has already changed, driven by the ever-accelerating application of technological innovation streams by an increasing number of nations and other groups, all designed to rapidly increase lethality … We, therefore, believe a most urgent national security task before us today is to intellectually prepare our leaders for such uncertainty, by equipping them with a strategic framework of how to think about the future and with a greater understanding of emerging technologies, all gained through a continuous, lifelong process of learning. (p. 9)

The need to cultivate a force that thinks outside the proverbial box is more paramount than ever because although the U.S. Navy remains superior in many ways to its near-peer competitors, our margin of advantage is no longer as overwhelming as it once was. China's People's Liberation Army has "transformed itself from a large but antiquated force into a capable, modern military. Although China continues to lag the U.S. in terms of aggregate military hardware and operational skills, it has improved its relative capabilities in many critical areas" (Heginbotham et al., 2015, p. III). Russia's military has also improved significantly and "Uncertainty about the future strength of the Russian military poses challenges for Western defense planners" (Radin et al., 2019, p. 1).

The U.S. Navy can no longer afford to solve problems in the same manner it has in the past. The landscape of the battlefield has shifted significantly and the effects needed to control both the conventional and unconventional domains must be developed both conventionally and unconventionally as well. Today's Navy needs leaders who encourage and foster creativity in order to develop a cadre that can fight and win wars in newly defined battlespaces.

C. INSPIRATIONAL MOTIVATION

This facet of transformational leadership lends itself to the idea that leaders must communicate a vision or objective that is not only motivating and unifying to those in their charge, but easily understandable as well. Leaders of this sort exhibit an esprit de corps attitude, encouraging a "sense of team spirit, creating general enthusiasm—especially towards difficult challenges" (Hughes, 2014, p. 9). Transformational leaders are excited, optimistic and invested in the future of the organization which in turn translates to a sense of purpose and meaning behind the tasks at hand. This shared sense of purpose provides the motivation and encouragement necessary to propel the group forward toward reaching precisely stated goals (Langston University, n.d.).

The naval organization, and the DoD at large varies widely demographically. With diversity in gender, race, ethnicity, age, and levels of education to name a few, each difference brings along with it an alternate lens from which individuals view the world and their place within it. Joint Publication 1 (JP-1) *Doctrine for the Armed Forces of the United States* notes that unity of effort "requires coordination and cooperation among all forces toward a commonly recognized objective" (Joint Chiefs of Staff, 2016, p. V-1). In order to achieve unity of effort, today's Navy needs leaders who have the capacity to coalesce those under their charge, inspiring and motivating them to believe in and achieve the organizational mission, regardless of the lens from which they view that mission.

D. IDEALIZED INFLUENCE

A leader that embodies the principle of idealized influence is one that leads by example and acts as a role model for those who follow them. Subordinates are able to

identify with their leader of whom they admire, respect and trust and consequently seek to mirror those behaviors they see in them. Leaders who act in this regard demonstrate high standards of ethical and moral conduct and "as a result, the followers identify with the leaders and match themselves with leaders' expectations and aspirations" (Hayati, Charkhabi, & Naami, 2014, p. 5).

In the profession of arms, Soldiers, Sailors, Airmen and Marines are the instrument of power in the "application of force in the resolution of a social or political problem" (Hackett, 1983, p. 9) and they are charged with the defense of America, its vital interests and using deadly force on behalf of the nation. The gravity of responsibility placed on the shoulders of the military necessitates that members of the Armed Forces, at all levels, carry out their duties both professionally and ethically. The U.S. military is entrusted with the instruments of war and authority on behalf of the nation and as such, they must "conform at all times to the highest standards of respect, honor, duty, service, integrity, excellence, courage, commitment, and loyalty" (Swain & Pierce, 2017, pp. 147–148). On every occasion where the military is out of alignment with the aforementioned standards, it erodes public confidence in the institution as a whole.

It is the responsibility of the naval officer to lead by example and personify the Navy's core values of Honor, Courage, and Commitment. During a time when there are constant reminders of leaders at all levels crossing ethical lines—from Tailhook to the Glenn Defense Marine scandal—naval leadership must make a round turn on exemplifying the competence and character the nation expects.

E. WHY WOMEN MATTER FOR ORGANIZATIONAL PERFORMANCE

Research has shown that the nontraditional transformational leadership style women bring to the workplace can increase the chances of organizational survival in an uncertain world and validates the belief that there is strength in diversity. The basic foundations of transformational leadership—individualized consideration, intellectual stimulation, inspirational motivation, and idealized influence (Riggio, 2014)—when used in conjunction can bring about changes in not only individuals but entire organizations.

Women leaders are paving new paths by drawing on what is unique to their socialization as women and the skills and outlooks developed from their experiences. They are achieving results in different ways by speaking directly to some of the basic emotional needs of all humans—to feel valued, challenged, and inspired. The Navy should encourage and further develop the distinct leadership style that women can bring to the organization in order to find the strength and flexibility needed to navigate in today's highly competitive and diverse operating environments.

VI. APPLYING ETHICAL FRAMEWORKS TO OCP

Decision making in complex situations is often times difficult when the circumstances surrounding them are not black and white. Applying normative ethical frameworks to these types of situations provides decision makers with sets of standards for behavior that may help them decide how they *ought* to act in a variety of situations. Though there are numerous frameworks available to evaluate issues such as these, three of the most prominent ethical theories utilized are the Consequentialist, Duty, and Virtue frameworks.

Because each framework focuses on specific ethical features of a given situation, there is the possibility that the conclusions reached will differ and may even contradict each other. Frameworks are not intended to provide yes or no answers but merely act as an aid in examining the different ethical aspects presented in a situation and weighing the considerations - both positive and negative - that should impact which courses of action decision makers ought to pursue.

This chapter will seek to apply the Consequentialist, Duty, and Virtue frameworks to three ethical debates surrounding the offering of an OCP benefit to female ADSMs: the ethics of using tax payer funds to pay for or offset the costs of OCP; limiting the demographic of female service members who can take advantage of the benefit and; concerns surrounding the disposition of frozen oocytes in the event of a female service member's death. The chapter will also discuss how prominent religions within the U.S. and military demographics may view the debates and whether they align with or differ from the ethical frameworks.

A. THE CONSEQUENTIALIST FRAMEWORK AND UTILITARIANISM

The development of the classical approach to Utilitarianism is most widely associated with English Philosophers Jeremy Bentham and John Stuart Mill. As philosophers and economists in England during the seventeen and eighteen-hundreds, both Bentham and Mill were focused on the modernization and reformation of legal and social practices within England. Their studies centered around understanding the truth

behind why an action or policy is considered morally good or bad, but more specifically, what made it right.

Utilitarianism, an ethical approach founded in consequentialist ethical theory, is often varied in definition depending on the academic discussing it. However, most agree that Utilitarianism at its core is "the best action [in a situation] will be that which provides the most good or does the least harm" (Brown University, n.d., para. 7). As one of the most frequently used ethical approaches, Utilitarianism can offer insight into situations that affect large groups of people as its primary concern is finding a suitable action that maximizes the greatest amount of good for the most amount of people. Actions studied under the Utilitarian lens are deemed morally right or wrong depending on the effects of their outcome—"the only effects of actions that are relevant are the good and bad results that they produce" (Nathanson, n.d., para. 1).

B. THE DUTY FRAMEWORK AND DEONTOLOGY

In stark contrast to Utilitarianism, duty based or deontological ethics, focuses solely on one's actions in a situation without regard to the effects or consequences those actions produce (BBC, n.d.). Immanuel Kant, one of the most influential philosophers in modern history noted that doing what is right is not about the consequences of one's actions but rather about having the proper intention in the performance of the action (Brown University, n.d.). Someone adhering to a duty-based approach to ethics would view an act as either right or wrong regardless of the circumstances surrounding the action. Some of the moral rules that they would live by are that all lies are bad, it is always wrong to steal and it is always wrong to kill innocent people (BBC, n.d.). Each of these statements would be viewed as true, independent of their consequences.

An easy way to approach duty-based ethics is to liken it to the way a parent teaches their child about right and wrong. When a child is learning, their parents do not necessarily teach them the circumstances or consequences behind a bad action before teaching them the act in itself is wrong. For example, when a parent is teaching their child about lying, they do not delve into the right or wrong circumstances for lying, they simply tell them it is always wrong to lie, regardless of context. Parents break actions into

simple “right or wrong” categories for ease of their child’s understanding. Though the Deontological framework is not simplistically rule-based but backed by logical argument, it too produces “right or wrong” categories without regard for consequences.

C. THE VIRTUE FRAMEWORK AND ARISTOTELIAN ETHICS

Unlike the consequentialist and deontological frameworks, the intent of the virtue framework is not to isolate and apply a universal principle to a moral situation, but rather to promote the use of virtuous human traits in decision making calculi. Applying virtues such as honesty, courage, commitment, fairness, and prudence in decision making processes would guide communities and organizations toward a path of continuous excellence, thus enabling them to flourish. The Golden Rule for those who apply the teachings of virtue ethics to their actions is “Do unto others as you would have them do unto you,” whereby individuals cannot be regarded simply as means to an end. The rule dictates that the right action in a given situation is the action a person of virtue would do if faced with the same circumstance.

The study of virtue in ethics is most notably attributed to the Greek philosopher Aristotle who asserted that “a virtuous person is someone who has ideal character traits” (Athanassoulis, n.d., para. 2). Aristotle argued that though virtuous traits require nurturing, once established, individuals possessing these traits will act virtuously regardless of situation because it is within their character to do so. Once traits of virtue are firmly established and rooted within an individual or organization they are considered to be on a path to excellence and capable of reaching their maximum potential.

D. CRITIQUES OF ETHICAL FRAMEWORKS

Though ethical frameworks can be useful tools for decision makers when faced with complex situations, they are not without drawbacks. One of the major critiques surrounding the Deontological and Utilitarian approaches is that the answers derived from their application do not always conform with individual perceptions of what is right and wrong. Similarly, the use of virtue ethics in decision making “does not produce codifiable principles [and is] unable to provide action-guidance” (Hursthouse & Pettigrove, 2016, para. 44).

When applying frameworks, users should keep in mind the possibility of competing outcomes, owed in part to each framework focusing on different and specific aspects of a moral dilemma. Because of this, decision makers should regard ethical frameworks merely as guides from which to derive standards of behavior from rather than for answers in and of themselves.

E. ETHICAL DEBATES CONCERNING OCP

Many of the conventional ethical debates surrounding OCP focus on distinguishing between medical and non-medical uses of OCP, the overall safety and efficacy of the process, and the effects of specifically targeting otherwise healthy women in advertising campaigns (Linkeviciute, Peccatori, Sanchini, & Boniolo, 2015). However, offering OCP as a military benefit—whether that benefit is wholly funded or subsidized by the DoD—adds additional ethical considerations that should be addressed that relate to the particular circumstances of DoD personnel. Those considerations may include, but are not limited to:

1. The ethics of using tax payer funds to pay for or offset the costs of OCP,
2. Limiting the demographic of female service members who can take advantage of the benefit, and
3. Concerns surrounding the disposition of frozen oocytes in the event of a female service member's death.

The following discussion applies the Consequentialist, Duty, and Virtue frameworks to the additional abovementioned issues the DoD should take into consideration with regard to offering OCP as a benefit to female service members.

1. Full or Partial Subsidization of OCP Using Federal Funding

As a department of the federal government, the military is subject to numerous policies and regulations concerning the ethical and responsible use of federal funding. From the Code of Federal Regulations guidelines to the establishment of the U.S. DoD Standards of Conduct Office, protocols and procedures have been instituted to ensure

compliance and transparency when it comes to the expenditure of public funds entrusted to the DoD.

Although guidelines and regulations are in place they do not always offer cut and dry solutions, especially for multifaceted issues that require deeper levels of thought and discussion. Applying ethical frameworks to the question of using federal funding for the purposes of OCP may not give a definitive answer either but in concert with already established guidelines and regulations, they may aid in weighing the positive and negative aspects that should be taken into consideration when determining a course of action to pursue.

a. Consequentialist Framework and Utilitarianism

Looking at the use of federal funding for OCP from a Utilitarian perspective asks us to look not at the act of using federal funds for this purpose, but rather the effects using that funding would yield, and whether or not that act produces more good than harm.

One potential positive outcome that could result from full or partial subsidization of OCP for female service members is that it could help stymie the exit of women who at the peak of their fertility, leave military service to start families. As noted in a previous chapter, women are retained at a rate 30 percent lower than men across the services after 10 years of service, citing work and family conflicts as one of their primary reasons for leaving (Secretary of Defense, 2016). Family planning decisions factor heavily in the choices military members make in their careers, perhaps even more so for female service members

> Timing pregnancy and childbirth around operational deployments, the accessibility of both parents, who may be geographically separated for child-rearing, and life-and-death risks in training and in combat all factor into the equation. Both men and women in uniform have increasingly sought means of scheduling pregnancies around the demands of their careers. (Barno & Bensahel, 2015, para. 50)

Offering OCP as a benefit to women may help to slow their departure from service because it affords them a sense of security in knowing that, even if they delay

starting a family in order to progress their careers they still have the opportunity to have biological children in the future via fertility preservation.

Slowing the rate of attrition for women is also advantageous to the DoD. When a female service member opts to exit military service, they take along with them their requisite knowledge and expertise, resulting in possible capability gaps and manning shortages. Their departure also brings additional costs to their respective services due to necessary replacement. In a Naval Postgraduate School thesis by Dianna L. Bo entitled "Estimating the Organizational Cost of Sexual Assault in the U.S. Military," Bo stated that the replacement and retraining of enlisted service members which includes basic and initial-skills training, had marginal costs as follows (listed in 2017 dollars): Army, $37,650.00; Navy, $44,032; Air Force and Marine Corps, $59,192. Bo also detailed low, average, and high training cost estimates for naval officers which varied depending on accession program and designator. Using these figures, marginal officer training costs can range anywhere from $39,000 to $1,290,880 (Bo, 2013).

The exodus of women from military service is also counterproductive to the military's goal of being a more inclusive fighting force, one that is representative of the nation's varied demographic. The DoD's Office of Diversity Management and Equal Opportunity (ODMEO) *DoD Diversity and Inclusion 2013 Summary Report* noted that

> Diversity and inclusion are strategic imperatives in the DoD and critical to mission readiness. Changing national demographics, emerging technologies, attrition in the senior ranks, and the evolving face of the operational environment demand that the Department change to reflect the face of the nation and acquire the skills necessary to meet future demands. (Department of Defense Office of Diversity Management and Equal Opportunity, 2013, p. 1)

Yet, only 16.23% of the DoD Active Duty force is comprised of women with even fewer holding senior leadership positions. The DMDC reports that across the DoD, women make up only 7% of senior officer ranks and 11% of senior enlisted ranks (Defense Manpower Data Center, 2017).

However, offering this benefit could also bring about unintended negative consequences as well. One such consequence could be inadvertently implying to female

service members that the DoD is offering this benefit in order to sway female service members to put off starting a family in order to focus solely on their career within the military. This could be misinterpreted to mean the DoD places greater emphasis and importance on a member's professional life than their personal. In doing so, this could be counterproductive to the military's efforts to promote a healthy work/life balance across the force.

Another possible outcome to consider would be how this could affect women who choose not to participate in the program. If a woman elects not to exercise the option, would this signal to her superiors that she places greater emphasis on her personal life than her professional, thus negatively impacting upward mobility? Offering this benefit could also be perceived as the DoD attempting to subvert the underlying issues that women in the military face when factoring in childbearing and rearing to their professional life, which could have negative connotations. By offering OCP to ADSMs it could be viewed that the DoD is merely applying a band-aid to problems such as perceived institutional resistance to a culture supportive of childbearing, or necessary restructuring of professional progression milestones that support career advancement for women who elect to have children during their most reproductive years.

It would also be prudent to consider how religion might impact a decision such as this. Because there are some religions opposed to ART, a possible consequence of federal funding being used to fund or subsidize OCP is that the DoD could face criticism from religious groups and individuals both within and outside of the organization. According to a 2015 Pew Research Center study, approximately 84% of the world's population practices the tenets of one of the five largest religious denominations, namely Christianity, Islam, Hinduism, Buddhism or folk religion (Pew Research Center, 2015). A more detailed look at how different religious sects view ART and OCP will take place in a following section within this chapter.

b. Duty Framework and Deontology

Looking at the use of federal funding for OCP from a Deontological perspective asks us to isolate the act of using these types of funds for this purpose from the effects the

act could potentially yield. In doing so, we are then only left to answer whether the action itself is performed with the right intentions.

In order to ascertain why using federal funding for OCP could be considered "right" or "just," it would be helpful to examine why the military initially established its IVF program. Before doing so, it is important to differentiate between situations when IVF is fully funded by the DoD versus when its cost is off-set. IVF will be funded in whole only for ADSMs who meet Category II or III requirements as outlined in DoD Instruction 1300.24, "Recovery Coordination Program." Treatment for ADSMs meeting these requirements is performed either at a participating MTF or at a purchased-care clinic. Otherwise, ADSMs who do not meet Category II or III requirements but wish to seek infertility treatment at an MTF must pay for it out of pocket, though at costs significantly lower than those found in the commercial sector.

In 2012, the Assistant Secretary of Defense for Health Affairs issued a memorandum "that made assisted reproductive services available for seriously ill or severely injured Active Duty Service members and authorized the use of supplemental health care program funds for that purpose." The intent behind the program was to "assist in the reduction of the disabling effects of the member's qualifying condition" (Assistant Secretary for Defense for Health Affairs, 2012, p. 1). Disabling effects related to serious illness or injuries can be both physical and mental. Infertility itself is a physical condition affecting one's ability to reproduce, but it also affects one's mental wellness as well when being able to reproduce biologically is hindered by a physical condition. The DoD's decision to offer this service to ADSMs, those both seriously ill or injured or those who are plagued by infertility unrelated to service related injuries, was done with the "good" or "just" intention of attempting to improve the quality of life for those who pledged themselves to serve their country. The DoD felt it their duty or obligation to "take care" of those service members who have either gave or are willing to give their lives in service to their country.

One could also apply this logic to the discussion of whether or not using federal funding for OCP would be done with 'right' or 'just' intentions. Relating the sense of duty or obligation felt by the DoD to "take care" of service members would then ethically

justify the use of this type of funding to pay for or offset the costs of OCP through the Deontological lens. Active duty service women spend the better part of their most reproductive years in service to their country and, in a manner of speaking, give a part of themselves in fulfillment of that service just like ADSMs who meet Category II or III requirements do.

c. Virtue Framework and Aristotelian Ethics

Unlike the consequentialist or duty frameworks, the virtue framework does not use a universal principle to determine whether using federal funding for OCP is right or wrong. Rather, the framework asks one to approach the situation from a virtuous perspective, applying traits such as benevolence, charitability, and a "Do unto others as you would have them do unto you" attitude in the decision-making process. It is from this perspective that we ask the question, "How would the virtuous organization respond regarding offering an OCP benefit to their female members?"

An example of an organization applying traits of virtue in its decision-making calculi is the genesis of Facebook's egg-freezing policy for its female employees. According to Facebook's Chief Operating Officer, Sheryl Sandberg, Facebook was inspired to offer its egg-freezing benefit because of the hardships faced by an employee with cancer. A female employee undergoing chemotherapy approached Sandberg, telling her that unless she froze her eggs prior to treatment, she would be unable to bear children in the future because of the effects the treatment would have on her fertility. The employee was unable to afford the expense on her own, and at the time, Facebook's medical plan did not cover the cost. Sandberg discussed the situation with the head of Facebook's Human Resources department saying "God we should cover this ... Why would we only cover this for women with cancer, why wouldn't we cover this more broadly?" (Alter, 2015, para. 3). Facebook's decision to offer an egg-freezing benefit to its female employees was done so under the auspices of kindness and charitability. They identified an area in which their actions could better the life and increase the happiness of their employees and implemented the necessary changes. Facebook's senior leadership understood that by treating their employees as individuals with personal needs and

desires instead of as “cogs in a wheel,” the Facebook community would flourish and thrive as a whole.

Because many female service members are divided between their personal desires to start a family and their professional goals to succeed in the military, if the DoD were to approach the situation at hand in the same manner as Facebook, they too would be acting as a virtuous organization would. Responding in this manner would help demonstrate to female service members that the organization recognizes and empathizes with their dilemma, and values the individual contributions and sacrifices they have made for the organization. The charitability and benevolence shown by the DoD would aid in improving the quality of life and personal happiness for many active duty females and as a result, the entire community would flourish.

2. OCP as an Exclusionary Benefit

Most benefits offered to military service members are available to all members across the spectrum, irrespective of age or gender. However, there are some benefits that require service members to meet certain conditions, such as fully-funded IVF being offered only to seriously or severely ill or injured ADSMs who meet Category II or III criteria as defined in DoD Instruction 1300.24. Benefits offered only to individuals who meet certain criteria are often times instituted in that manner due to statutory requirements linked to the funding or because there is merely not enough DoD funding available to offer the benefit cart blanche.

In determining whether or not restricting the OCP benefit to female service members within a certain age range is not only ethical but within the best interest of both the DoD and the individual service member, it would help to examine those limitations within the constructs of the different ethical frameworks.

a. Consequentialist Framework and Utilitarianism

Looking at restricting the benefit of OCP to women within a defined age group asks us not to look at the restriction itself, but rather the effects the restriction would yield, and if it produces more good than harm. For purposes of discussion, it would be

helpful to define what is meant by “good” and “harm” and how they are to be measured. In this instance, “good” is defined as having greater chances of successful implantation from previously frozen oocytes and “harm” defined as having lesser chances of successful implantation from previously frozen oocytes. By limiting the ages in which this benefit is offered to only those ages where probabilities of implantation are above a certain percentage would not only assist in ensuring federal funds are spent discerningly but also benefit the ADSM because it would help to educate them on the limitations of the technology which would then enable them to family plan more effectively.

A 2015 joint report from the CDC, American Society for Reproductive Medicine (ASRM), and Society for Assisted Reproductive Technology (SART) published IVF egg or embryo freezing success rates in terms of the percentage of IVF cycles that resulted in successful implantation. According to the report, “The percentage of transferred frozen nondonor embryos that [successfully] implanted decreased with age from about 47% among women younger than 35 to 16% among women older than age 44.” The report also noted that “the age of the woman at the time of retrieval has a larger effect on implantation rates than the age of the woman at the time of transfer” (National Center for Chronic Disease Prevention and Health Promotion [NCCDPHP], 2017, p. 43). As illustrated in Figure 1 in the Appendix, data from the report showed that for women under the age of 35 who conceived using previously frozen embryos, the success rate of implantation was about 47%, 43.6% for women 35–37, 38.3% for women 38–40, 31.4% for women 41–42, 23.4% for women 43–44, and 16.2% for women older than 44 (NCCDPHP, 2017).

Based on the statistics above, limiting the ages in which women can access this benefit to those ages in which oocytes are most viable, in addition to an age range which affords them the greatest opportunity to conceive with those oocytes at a future age when implantation success rates are highest, produces more good than harm to the service member. Higher rates of successful implantation from previously frozen oocytes also equates to more harm than good for the DoD because it justifies the limitations put in place in terms of the application of funding.

b. Duty Framework and Deontology

Determining whether or not it would be ethical to place age restrictions on access to the benefit of OCP from a Deontological perspective, one would base acceptability on the act of restriction itself as opposed to the outcomes of such restrictions.

In this situation, the DoD's restricting of certain ADSMs from accessing the benefit on the basis of age alone cannot be considered ethical. Though data shows that women in certain age ranges have higher or lower chances of successful implantation from previously frozen eggs or embryos, it is not necessarily indicative of age being the only contributing factor to success. Furthermore, because neither failure or success rates are 100% for any age category, there still leaves opportunity for women in all age ranges to experience a successful implantation which could result in live birth. Removing the future success rates of implantation via IVF from the discussion on who should have access to the benefit places all women, regardless of age, on an equal plane.

Under this framework, the only restrictions that should be taken into consideration should be those that come from a certified medical practitioner who will factor in additional data to determine eligibility, such as overall reproductive health of the individual. Excluding certain age ranges from benefitting from the program on the basis of age alone, without factoring in other medical considerations could not be deemed ethical. Instead, participation in the program should be offered to all females, with any exclusions grounded in the particular individual's medical non-suitability.

c. Virtue Framework and Aristotelian Ethics

Where Utilitarianism and Deontology use calculations or principle-based duties to make moral decisions in businesses and organizations, "virtue ethics looks to motivate aspirational values and seeks to answer the question, 'what kind of organization should we be?'" (Chun, 2005, p. 269). If the DoD seeks excellence through a strong and healthy community culture, then it must begin with the way leadership treats individuals within the community, apart from the collective whole.

If the DoD were to categorize individuals only to discriminate against some by not allowing them access to a benefit like OCP should they fall outside the category, they

would not be viewing each member as an individual, but rather as a faceless number used as a means to an end. Furthermore, by ignoring the commitments and sacrifices made by some implies that the DoD values some individual's or group's contributions more than others.

If the DoD wishes to act in a virtuous manner, it would offer OCP as a benefit to all women in the military irrespective of age because all have made the same commitment to the organization and are therefore deserving of the same level of care and commitment in return.

3. Ownership and Responsibility of Oocytes

A frequently discussed topic related to ART is the disposition of cryopreserved embryos that are not used in the IVF process. The most commonplace embryo disposition options are to "store for reproduction, thaw and discard, donate to another couple, freeze indefinitely, or donate for research" (National Institute of Health, 2010, para. 1). Typically, decisions on the disposition of unused embryos occurs at the time of freezing, "at an early stage of IVF and at the point that reproductive intent is directed squarely in favor of childbearing and the prevalence of high decisional conflict about disposition of potential frozen embryos is at the lowest" (Nakagawa, Lyerly, & Kuppermann, 2011, pg. 650).

Though oocyte preservation differs from embryo preservation in that oocytes are not fertilized prior to freezing, the options available for ownership and disposition remain the same. As previously noted, couples are normally presented with a consent agreement prior to creation of the embryo that outlines what both parties want for the embryos should the couple separate or if either person dies. In the circumstance of federally funded cryopreservation, is emulating the precedent set in cases of personally funded procedures in the best interest of the service member and the DoD? In an effort to identify the best courses of action for how the DoD and ADSMs should handle the ownership and disposition of oocytes and whether those actions are ethical, especially in the event of a service member's death, it would be beneficial to evaluate them within the different ethical frameworks.

a. Consequentialist Framework and Utilitarianism

Current DoD policy dictates that the ownership and disposition of unused embryos from military service members who undergo IVF through military treatment methods follow applicable state laws. Policy also states that the service member and their lawful spouse have sole responsibility of the embryos and explicitly notes that "DoD will not have ownership or custody of cryopreserved embryos and will not be involved in the ultimate disposition of excess embryos" (Assistant Secretary for Defense for Health Affairs, 2012, p. 2).

As the current policy stands, affording sole ownership and responsibility for embryos to the service member offers them reproductive autonomy in that they are free to make reproductive decisions best suited for them and their partners, even in the event of death. The policy also recuses the DoD from possible legal obligations and ethical concerns surrounding the use and ultimate disposition of the embryos. This arrangement is beneficial to both the individual service member and the DoD resulting in more good than harm for both parties. Extending this type of arrangement to cover the ownership and responsibility of oocytes in an OCP benefit program should also work similarly, thus producing more good than harm for both the service member and the DoD.

b. Duty Framework and Deontology

According to Deontology, for actions to be considered ethically sound, the principles on which they were founded must be well-intentioned in and of themselves, irrespective of the consequences that those actions may have. In the case of ownership and responsibility for oocytes that are harvested and preserved using federal funding, granting autonomy to the service member would, from a Deontological perspective, be the right thing to do regardless of how the procedure and subsequent storage was funded.

Under this framework, the decision would be morally sound because the well-intentioned Deontologist would believe the oocytes remain the human property of the service member outside of their bodies, just as they are on the inside. Because implementing current IVF policies in the administration of an OCP program honors the

service member's autonomy and observes a member's right to their human property, a Deontologist would find the current IVF policy ethically permissible.

c. Virtue Framework and Aristotelian Ethics

Like the Utilitarian and Deontologist, an organization that adopts Aristotelian teachings would likely argue that service member autonomy over their oocytes is the morally sound decision. Whereas Consequentialists prescribe autonomy on the basis of favorable outcomes for both the ADSM and the DoD, and Deontologists favor autonomy because of the well-meaning intent behind the act, the virtuous organization would advocate for autonomy because not only is it the right thing to do, but because the Golden Rule demands it.

The virtuous organization offers the OCP benefit to ADSMs because they believe the unique sacrifices made by female service members should be met with unique benefits. If the same organization were to offer the benefit under the auspices of benevolence, charitability, and the Golden Rule, to place conditions such as government ownership of the oocytes would negate the inherent kindness of the act.

F. DRAWING THE LINE ON CARE

Many would ask if and where a line should be drawn with regard to "taking care" of service members, especially during times of competing priorities and limited resources. Examining this question through each ethical framework may help the DoD to find an answer to this tough and often debated question.

Looking at this question within the cost-benefit Utilitarian framework asks us to equate the best action in a given situation to be the one that provides the most good or does the least harm for the greatest amount of people. Under this lens, one could assume that for the DoD, the line for care would be drawn at the point where benefits to both the DoD and service members no longer outweigh the disadvantages. Relying on this framework alone to make tough decisions may come with unintended consequences, however. Through this lens, members are no longer seen as beings with individual needs, but rather as a collective whole serving as a means to an end. Because of this, those

disadvantaged groups or individuals may feel undervalued and alienated from the community which could result in loss of unit cohesion, effectiveness, and possible retention issues.

Where utilitarianism focuses on outcomes, Deontology focuses solely on one's actions in a given situation and whether that action was performed with the right or just intentions, regardless of consequences. Through this framework, a reasonable answer to where the DoD might draw the line on care for its members could very well be nowhere, or at minimum, further down the spectrum than found in the civilian sector. Because members of the military are asked to make unique sacrifices not asked of their civilian counterparts, it should be expected that those sacrifices are matched by unique obligations on the part of the DoD because it is intrinsically the right thing to do. Basing decisions on this framework alone would undoubtedly bring about unintended consequences, however, those consequences would not bear on the decision-making process. Consequences would merely be seen as justifiable trade-offs for the DoD fulfilling its obligation to its members.

Much like Deontology, the virtue framework heavily emphasizes the intent behind an action when making decisions. However, where Deontology looks for justifiable intent grounded in logical argument, Aristotelian ethics aims to ground intent and subsequent decisions on characteristics of virtue and the Golden Rule in an effort to reach a state of excellence. Virtuous organizations will continually ask themselves when faced with tough choices, What would the most excellent organization do in this situation? Organizations operating in this capacity are also mindful of the fact that an organization is only as good as its people. It is because of this adage that an organization in pursuit of excellence will take care of its people to the maximum extent possible because a community that feels cared for on an individual level will thrive and move towards excellence as a balanced whole. If the DoD seeks excellence grounded in virtue, it cannot seek to draw a line on how it cares for service members. The Golden Rule dictates that the DoD cannot ask more of its members than it is willing to give in return. If each service member has committed to the ultimate sacrifice in service to their country,

the Golden Rule demands that the DoD reciprocates that commitment either at or above the same level.

G. ART AND RELIGION

For many, religion plays a central role in one's view of the world and their reaction to it, particularly when it comes to life, death, marriage and divorce. As noted in a previous section, approximately 84% of the world practices the tenets of one of the five largest religious denominations, namely Christianity, Islam, Hinduism, Buddhism or folk religion. Within the U.S., Christian sects represent the majority of the population, with Evangelical Protestant (25.4%), Catholicism (20.8%), and Mainline Protestant (14.7%) claiming the most followers. It should also be noted that 22.8% of the U.S. population does not affiliate with any one religion, whether they be a religious "none," Atheist, or Agnostic (Pew Research Center, n.d.). The military population is equally diverse in religious faiths, but its make-up closely resembles that of the overall U.S. population. A 2009 Defense Equal Opportunity Management Institute religious diversity study found that approximately 32% of the military identified with at least one of the Evangelical Protestant sects, 20% identified as Catholic, and 25.5% held no religious preference (Defense Equal Opportunity Management Insitute, 2009).

Because federal funding would be used to provide OCP to ADSMs, we cannot discount the role of religion and religious beliefs within the context of ART. The use of federal funding for this purpose could potentially leave the DoD open to criticism from different religious sects, particularly those opposed to ART. It is important to note that because OCP has only recently come into the mainstream, limited literature exists regarding religious views on OCP specifically. Because of this, we will work under the assumption that a religion's potential view on OCP closely resembles that of its view on IVF.

1. Evangelical Protestantism and ART

Evangelical Protestantism encompasses several denominations, the most well-known being the Lutherans, Calvinists, Anglicans, Baptists, Methodists and the Pentecostalists. Because of the numerous denominations within Evangelical

Protestantism, its perspectives on ART are also varied and leave no singular, overarching guideline for those who practice the faith to follow. However, the majority of denominations that permit the use of IVF limit its use to only married couples, where gametes are from the married individuals, and require that all embryos are used and selective reduction is forbidden (Sallam & Sallam, 2016).

Based on the belief described above, one might assume that the use of federal funding for full or partial subsidization of OCP would be accepted by those Evangelical Protestant denominations that approve the use of IVF. Limiting the demographic of female service members who can take advantage of the benefit, because most believe homosexuality should be discouraged by society, evangelicals would likely seek to exclude homosexual females from accessing the benefit since future embryo formation must be done within the confines of marriage with the needed sperm coming from the ADSMs husband (Murphy, 2015). It should be mentioned however that although homosexuality is discouraged by the majority, there has been an increase in the number of evangelicals who say that homosexuality should be accepted by society, from 26% to 36% between 2007 and 2014 (Murphy, 2015).

Evangelicals would also likely side with those who believe frozen oocytes remain the property of the ADSM since the evangelical perspective is that gametes are only to be used within the confines of marriage and are from the married individuals.

2. Catholicism and ART

In contrast to the Evangelical Protestant faith, the Catholic position on ART in all its forms is non-acceptance. “The Vatican has a clear position against assisted reproduction, ever since 1956, Pope Pius XII defined artificial fecundation as immoral and illegal, because it affects human lives by separating procreation and sexual normal function” (IVF Worldwide, n.d., para. 2).

The church’s National Catholic Bioethics Center (NCBC) states, “Theoretically, freezing human eggs is not intrinsically evil, since one can conceive of some clinical settings in which a woman might benefit from such technique (say, for example, to evaluate some aspect of her fertility that is otherwise impossible to ascertain)” (Cioffi,

2017, para. 3). However, per NCBC, if the reason for the procedure is for eventual use in the IVF process, then the action is considered morally tainted and unacceptable (Cioffi, 2017). Interestingly however is that, although the diocese itself deems IVF to be morally impermissible, a 2013 Pew Research study found that only 13% of Catholic followers found IVF to be morally wrong and that 77% found it to be either morally acceptable or not a moral issue at all (Pew Research Center, 2013).

The church administration's published stance against egg-freezing for purposes of IVF is a clear indication that they would not support the use of federal funding for an OCP benefit for ADSMs since the purpose of the benefit is future fertility preservation that would necessitate IVF. However, if you take into consideration the 2013 Pew Research data showing that 77% of individual Catholics polled do not consider IVF morally wrong or a moral issue at all, the outcome would likely be more for than against an OCP benefit.

Because it is assumed that 77% of Catholic individuals do not consider IVF morally wrong or an issue, it would be worthwhile to explore how these individuals might view limiting those who could access a proposed OCP benefit. Like the Evangelical Protestant faith, the Catholic Church itself does not approve of homosexuality, believing that "While the Catholic Church does not consider 'homosexual orientation' sinful in and of itself, it does have a very negative attitude toward it" (Human Rights Campaign, 2018, para. 4). However, a 2017 Pew Research Center poll showed that 67% of Catholics polled were in favor of same-sex marriage (Pew Research Center, 2017). Based on these statistics, one could assume that individual Catholics would not be opposed to the DoD offering an OCP benefit and would not seek to limit those who partake in it on the basis of sexual orientation alone.

Predicting how individual Catholics might view the subject of oocyte ownership would be a difficult task considering there is no Catechism that advocates for ART itself. While some individuals may diverge from the Catholic Church regarding individual beliefs toward ART and same-sex marriage, it is not to say that they do not follow the Catechism's of the Catholic Church with regard to the "gift of child." However, if these individuals continue to believe in the Catechism's in this regard, believing that the

"supreme gift of marriage is a human person," then they would likely conclude that frozen oocytes are the property of the ADSM since they hold the belief that children should only be born out of the sanctity of marriage (The Catholic Church, n.d.).

3. Mainline Protestantism and ART

Like its evangelical brethren, Mainline Protestantism is composed of multiple churches and often referred to as the "Seven Sisters of American Protestantism." Churches include the United Methodist Church, The Evangelical Lutheran Church in America, the Presbyterian Church, the Episcopal Church, the American Baptist Churches, The United Church of Christ, and the Disciples of Christ.

Mainline Protestants also share the views of their evangelical brethren regarding ART in that it is permissible, within limits, so long as it does not go outside the confines of marriage in such ways as introducing third parties into the process through donor eggs, sperm or surrogacy (Dollar, 2012). Their views on ART would indicate that Mainline Protestants would be supportive of an OCP benefit so long as the future use of the eggs in the IVF process are fertilized by their husbands and the embryo then implanted into the respective service member.

However, some denominations within the Mainline Protestant sect are changing their views on the definition of marriage which could then alter their views on the utilization of third parties during the IVF process, at least when it comes to the donation of sperm. For example, in 2015, clergy from both the Episcopal and Presbyterian churches were authorized to perform same-sex marriages (Masci & Lipka, 2015). The United Methodist Church however, still does not condone same-sex blessings or marriages. Individually however, a 2017 Pew Research Center study showed that 68% of Mainline Protestants polled supported same-sex marriages (Pew Research Center, 2017). This is important to note because it bears relevancy to whether Mainline Protestants would seek to limit access to an OCP benefit to only heterosexual females. In light of the changes taking place within Mainline Protestant denominations regarding same-sex marriages, one could assume that the denominations would not be opposed to OCP being offered to all female ADSMs regardless of sexual orientation.

Mainline Protestants are likely to take on their Evangelical brethren's view regarding ADSM ownership of oocytes as well. This could be assumed because the fundamental belief Mainline Protestants hold is that ART should only be performed within the confines of marriage.

H. ETHICAL FRAMEWORK COMPARISON

As shown throughout this discussion, applying ethical frameworks to address the different aspects related to the DoD fully funding or offsetting the costs of OCP for ADSMs yields a number of positive, negative, and sometimes contradictory answers. Yet, using frameworks such as these to make ethical judgements helps identify the issues and ethical implications that should be addressed before a program is instituted. Table 2, provided in the Appendix, compares and contrasts each of the three ethical debates discussed within each of the three ethical frameworks.

After applying the frameworks, it was found that different ethical conclusions can come from the same question. Under the consequentialist lens, we saw that the use of tax payer funding for an OCP benefit would not be deemed ethically justifiable because the good consequences from doing so did not outweigh the bad. However, had a benefit been ethically justified, the framework would have been supportive of both limiting who can access it and service member ownership of frozen oocytes. In contrast, both the deontological and virtue frameworks found the use of tax payer funding to be ethically justifiable, in addition to not supporting limiting access to the benefit, while supporting service member ownership of frozen oocytes. The close alignment of outcomes under the deontological and virtue frameworks can most likely be attributed to the fact that both frameworks focus on the intent behind an action rather than the consequences of the action.

Though there are additional ethical frameworks that could be used, it's reasonable to assume those outcomes would also be varied and thus inconclusive in and of themselves. However, the intent behind applying the frameworks is not to find an absolute answer but rather to examine the situation from various viewpoints in order to make a more well-informed decision.

I. RELIGIOUS VIEWPOINT COMPARISON

Many people turn to religion to make sense of the world around them, especially events related to life, death, marriage, and divorce. Because ART is a controversial topic, especially amongst the varying religions, it would benefit the DoD to consider how the most prominent religions might react to the three ethical debates discussed. Table 3, provided in the Appendix, compares and contrasts each of the three ethical debates discussed from the perspectives of the three major U.S. Christian religions.

Both Protestant denominations studied were closely aligned in that both were supportive of ART and ADSM ownership of oocytes, but would most likely seek to limit access to the benefit to heterosexual females only. However, surveys have shown a positive increase in the number of individual Protestants, both Evangelical and Mainline, who are supportive of homosexuality and same-sex marriage. This is important for the DoD to take into consideration because although both denominations' publicly stated views may be unsupportive, individual members do not necessarily share the same outlook. Similarly, the Catholic Church's disapproval of ART and homosexuality is growing increasingly at odds with how individual Catholics view each topic, as national surveys have indicated that the number of members that are accepting of both is rising. The paradigm shift taking place within the three churches could indicate that the DoD would face less opposition to the establishment of an OCP benefit than originally thought.

VII. COST-BENEFIT ANALYSIS

The U.S. Navy has a finite amount of resources at its disposal to carry out the missions that the nation and its taxpayers expect of it. It is incumbent upon the Navy to utilize these resources as efficiently as possible to deliver the effects that the nation demands of it. Personnel and equipment are among the most expensive of these; therefore, it follows that we should maximize our potential for both personnel and equipment. We have laid out many reasons why OCP is beneficial to the Navy for both for the quality of life of Navy personnel and for personnel retention. We now establish the costs and benefits of implementing such a program.

To present the costs to the Navy, we must first establish a baseline for what each phase of the OCP process would cost. For the general public costs would be higher; however, MTFs across the country are able to lower the costs to service members and the Navy. IVF and OCP for medically necessary reasons are already available, making the overhead costs of starting an elective OCP program negligible. The primary costs would be directly related to the actual procedures being performed and the number of service members who would take advantage of the procedure. We estimate this number would be relatively small on an annual basis, limiting the amount of scaling that would be necessary.

Estimating the costs and benefits of OCP being offered to the force as a whole is difficult. Though the number of women in the Navy is relatively easy to calculate, the number which would utilize OCP is much more difficult to predict. Similarly, the costs of replacing personnel varies significantly depending on rank, time in service, and training received. For the purpose of this study we have restricted the population to a small segment of the Navy, female officers between the ranks of O-1 and O-4, as shown in Table 4, provided in the Appendix. Though a small sample size, this segment of women represents the bulk of the women in prime child bearing age in the Officer Corps. This cost benefit estimate assumes that all women would be eligible to take advantage of OCP if they desired to. We have given a range of costs and benefits to the Navy based on the percentage of the force that chooses to participate and the percentage of increased

retention that the program leads to. By showing a range of costs and savings in this specific demographic, we are able to provide a reasonable window of the cost and benefits of OCP.

A. METHODOLOGY

Naval officers are contractually committed to at least four years of active duty service, which places them at the rank of O-3 or lieutenant. Since this is the rank at which women are most likely to exit naval service, we use this as our high-water mark for retention. To establish the costs of providing OCP, we sum the number of female officers from O-1 to O-4 and assume a range of utilization of OCP from 0% to 10%. We assume an average of 5% (109 officers) elect to utilize OCP but also provide a range of values in Table 5 provided in the Appendix.

Our range of utilization is based on data captured by SART from 2014 to 2017 that showed less than 1% of the female U.S. population completed the OCP procedure (SART, 2019). Because our female Navy population is a good representation of the cross-section of society, we felt it safe to assume that OCP completion rates in the Navy would closely mirror that of the general population. However, because cost to the individual does not factor for the Navy female population, we also assumed there would be a slight increase in OCP completion rates and inferred a 5% average completion rate.

Once we calculated the difference between the number of O-3 and O-4 female officers, we took a range of percentages from 0% to 10% to calculate potential increased retention if OCP were offered, shown in Table 5 in the Appendix. When assessing this number, we must keep in mind that, per SECDEF Carter's speech in 2016, female retention is 30% lower than male retention and an expressed primary driver for that retention difference is the desire to start a family. OCP will not be a complete solution to this retention problem, but could aid the Navy in keeping talented women in the naval service. We again choose to use a range because of the uncertainty in participation rates and the resultant increase in retention.

B. OCP PROCEDURE COSTS

As previously stated, the cost of the full OCP process, from harvesting the oocytes to implantation utilizing IVF, is appreciably cheaper for service members using military facilities than it would be for civilians using commercially available facilities.

The OCP Process is broken into three stages: harvesting oocytes, storing the oocytes, and implanting the oocytes via IVF. The cost of these procedures varies in the civilian world, but MTFs have lower, set prices for each procedure. We have taken the average cost for civilian facilities for comparison. Harvesting oocytes from a service member involves several rounds of medication to cause a woman to release the eggs and then a procedure to harvest them. The cost of the medication averages $4,000 for civilians; however, service members pay nothing for the medication provided to them at the MTF and the government pays only a fraction of the cost of civilian providers (McHaney, 2014). The procedure itself would cost an average of $9,000 for a civilian, but at least one MTF charges only 37% that amount at $3,299 (ART Institute of Washington Administrator, personal communication, May 17, 2018). The oocytes are then frozen and stored in the second stage. Freezing and storage for 10 years is only $4,700 for a military facility, but upwards of $7,500 for non-military (Reproductive Science Center, n.d.). Finally, to implant the oocytes requires an IVF procedure. This can take multiple attempts as IVF only has a 33% rate of success after one cycle and 70% rate of success after three cycles (Advanced Centre for Reproductive Medicine, n.d.), but averages $5,000 per attempt at an MTF or $13,500 for a civilian facility (Internet Health Resources, n.d.).

Even using low end commercial cost estimates, OCP for service members would be $7,000 less than the price of a civilian having the same procedure done. The average cost for civilians, shown in Table 6 of the Appendix, is approximately $34,000 (Advanced Fertility Services, n.d.), but only around $27,000 for military personnel utilizing MTF, as shown in Table 7 provided in the Appendix. This lower cost is attributable to government negotiated price schedules and limited pay scales in government facilities.

Using the numbers in Table 8 of the Appendix, we show that the Navy would spend approximately $12,671,511 if our sample group of 5% (469 female officers O-1 to O-4) utilized OCP. We see in Table 9 provided in the Appendix, that if the entire DoN force were to utilize OCP at the 5% rate, it would cost the Navy approximately $89,538,867. In this instance, the force refers to all AD females who may potentially fall within the prime OCP age range, to include O1 through O4, and E3 through E7. These numbers are a snapshot of the current force and that cost would be spread out over several years due to the nature of the OCP process; however, this represents the current cost of implementing the program. Over time, this cost may go down since women who have already participated in the program would not need to do so again.

C. BENEFITS OF OCP

If offering OCP could reduce some stressors involved with family planning, the Navy could potentially retain more female members and avoid the cost associated with replacing them. If this were to happen to even a small portion of the personnel who have received the most expensive training, it could result in significant avoided cost for the Navy.

One reason we focused on the O-1 to O-4 female officer demographic is because we are able to provide a reasonable estimate of training costs. With such a wide variety of training and experience provided in the Navy, establishing one baseline for training costs across all ranks, rates, and specialties would be so broad as to be irrelevant. By narrowing our analysis to female officers O-1 to O-4 we can better estimate the Navy's investment in a category of officers for whom OCP is a highly relevant choice.

There is a wide range in officer training costs, ranging from $39,000 to $1,290,880 (Bo, 2013). We have taken the average of $664,940, assuming that the full spectrum of personnel would utilize OCP and this cost is representative for this full range of personnel, with officers typically being at the upper end of it.

We then multiplied this cost number by the average additional number of female officers (109) who would be retained if OCP were offered to them. Using this 5% average we see that the Navy would save approximately $72,212,484 if they were able to

retain the women who would previously have left naval service. In fact, if only 2% additional female officers (O-1 to O-4) were retained, it would lead to $28,884,994 in saved training costs, shown in Table 5 of the Appendix. This number is more than three times the predicted cost of executing an OCP program for all O-1 to O-4 officers.

D. SUMMARY

If the Navy were to provide OCP services it could represent a significant incentive for members to stay in naval service. Based on our analysis of O-1 to O-4 female officers, the Navy would save far more in avoided costs of training replacement officers than it would cost to provide its current female officers with OCP.

Even if only a single female officer from the lowest end of the training cost spectrum at $39,000 were retained due to the implementation of OCP, it would save the Navy at minimum, approximately $12,000 which can equate to significant savings in the long run. Because of the relatively low cost of OCP, for any individual case, we can also conclude that in general it will always be more cost effective for the Navy to offer OCP to a female service member than see her leave the service, since the avoided recruiting and training costs are always higher than the OCP costs.

Even allowing service members to pay for their own OCP treatment at a MTF would represent a significant cost saving to Navy personnel compared to civilian sector alternatives and would be of minimal cost to the Navy. In sum, the low cost and high return of offering an OCP program suggests it warrants further investigation by the Navy.

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VIII. DISCUSSION AND RECOMMENDATIONS

A. DISCUSSION

This study reviewed the process and costs of OCP in both civilian and military healthcare facilities, examined OCP's use in the tech industry to retain female employees, assessed a variety of philosophical and religious viewpoints towards OCP, and calculated the potential costs and savings that could be incurred if the Navy adopted OCP as a retention tool. The goal behind the study was to discover if OCP could be utilized as a cost-effective method for increasing female retention within the Navy. By reviewing a variety of factors surrounding OCP and its use in the private sector as a retention tool, we were able to assess the impact that it could have on the Navy.

OCP represents a new step towards allowing women to pursue a career and start a family at a time that is right for them. The tech industry recognized this and has successfully adopted OCP policies in an effort to increase retention. Both the DoD and civilian technology sector have already enacted a variety of policies to aid women with starting and raising families, including increased maternity leave, designated lactation locations, and increased childcare options. Each of these measures were implemented in an effort to ease the stress on women in the workplace who desire to have both a family and a career. OCP presents itself as another means to help women have a stable and successful career while raising a family.

Examining philosophical and religious views on OCP gave us a more in-depth look at the morality and religious acceptance of OCP and the use of taxpayer funding to provide OCP to members of the military. While the ethical frameworks we reviewed did not conclusively determine if using taxpayer funds for OCP was ethically permissible or not, it did allow us to study the situation from different viewpoints and better grasp the ethical situations surrounding the use of OCP in our Navy. Similarly, various religions have different beliefs structures, not all of which are specific or detailed on their stance on OCP. The religious organizations are made up of individuals, who's thoughts on what

is acceptable morph over time. It is therefore quite difficult to predict what OCP policy will work for all religions.

Calculating out the cost of OCP and the cost of training replacement female personnel is one of the most enlightening parts of our analysis. We established that, in most cases, the cost of training replacement personnel far outweighs the cost of offering OCP in an attempt to retain existing personnel. The DoD is looking both to increase female retention and decrease costs—OCP offers a chance to do both.

B. RECOMMENDATIONS

As the Navy moves forward and becomes more inclusive of females and more family oriented, civilian and military leaders in the Navy should develop and implement a policy allowing women to utilize OCP. This would allow women to build and maintain careers in the Navy without sacrificing their most fertile eggs, saving them to build a family when it best suits them and their career paths.

This policy could come with an additional service commitment attached to limit any potential abuses of the policy and ensure personnel remain in naval service after they have the procedure. The Navy could also consider placing certain restrictions on access such as, but not limited to, age limitations and adequate levels of physical fitness to increase the likelihood of successful future implantation.

By implementing such a procedure, the Navy has the potential to save millions of dollars in retraining costs. Outside of the material cost of training, they would also be investing in Sailors with years of experience that cannot be taught in a school house. The increased retention from such a program would have a synergistic effect in the Fleet, allowing for increased female leadership and mentorship opportunities. This more diverse force would, in turn, lead to increased readiness and lethality for the U.S. Navy. The low cost of OCP relative to the cost of training makes this policy an easy win for the both the Navy and its Sailors.

APPENDIX. FIGURES AND TABLES

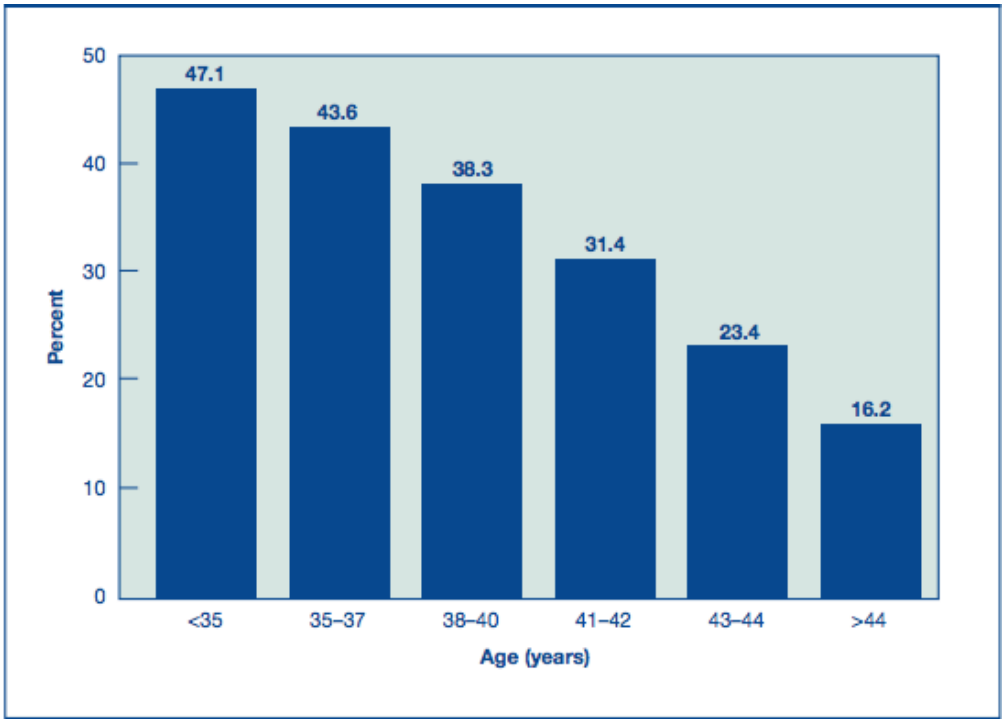

Figure 1. Percentages of embryos transferred that implanted using frozen nondonor embryos, by age group. Source: National Center for Chronic Disease Prevention and Health Promotion (2017).

Table 1. Comparison of U.S. Navy, Apple, Facebook, and Google family planning benefits

	Maternity Leave Length	OCP Benefit	IVF Benefit	On-Site Day Care Benefit
Navy	12 weeks	No	No*	Yes
Apple	18 weeks	Yes	Yes	No
Facebook	16 weeks	Yes	Yes	No
Google	18 weeks	Yes	Yes	Yes

*Navy offers IVF benefit to ADSMs meeting certain eligibility criteria

Table 2. Comparison of ethical debates in context of ethical framework

	Use of taxpayer funding	Limiting benefit access	Ownership of frozen eggs	Outcome
Consequentialist Framework	Not ethically justified	Supports limiting access	Supports ADSM ownership	OCP not deemed ethically justified because good does not outweigh harm; Supports limiting access to benefit and ADSM ownership
Deontological Framework	Ethically justified	Does not support limiting access	Supports ADSM ownership	OCP deemed ethically justified; Supports open access to benefit and ADSM ownership
Virtue Framework	Ethically justified	Does not support limiting access	Supports ADSM ownership	OCP deemed ethically justified; Supports open access to benefit and ADSM ownership

Table 3. Comparison of ethical debates in context of U.S. Christian religions

	Use of taxpayer funding	Limiting benefit access	Ownership of frozen eggs	Outcome
Catholicism	Unsupportive	N/A	N/A	Unsupportive of OCP benefit (with caveat)
Evangelical Protestantism	Supportive	Supports limiting access	Supports ADSM ownership	Supportive of OCP benefit; Supports limiting access (with caveat) and ADSM ownership
Mainline Protestantism	Supportive	Supports limiting access	Supports ADSM ownership	Supportive of OCP benefit; Supports limiting access (with caveat) and ADSM ownership

Table 4. U.S. Navy female officers in prime paygrades for OCP. Source: DMDC (2019).

O1	1,616
O2	1,574
O3	4,410
O4	1,787
Total	9,387

Table 5. Savings to U.S. Navy based on average officer retraining costs. Adapted from DMDC (2019), Bo (2013).

Percent of Delta Who Stay In	Female Officers Staying In	Retraining Costs Saved (Average)
10%	217	$144,424,968
9%	195	$129,982,471
8%	174	$115,539,974
7%	152	$101,097,478
6%	130	$86,654,981
5%	109	$72,212,484
4%	87	$57,769,987
3%	65	$43,327,490
2%	43	$28,884,994
1%	22	$14,442,497

Table 6. Commercial OCP costs, on average. Adapted from McHaney (2014), Reproductive Science Center (n.d.), Internet Health Resources (n.d.).

Costs	Low	High	Avg
Medication	$3,000	$5,000	$4,000
Procedure	$8,000	$10,000	$9,000
Freezing	$500	$1,000	$750
Storage	$4,500	$9,000	$6,750
IVF	$12,000	$15,000	$13,500
Total cost	$28,000	$40,000	$34,000

Table 7. Military OCP costs, on average. Adapted from ART Institute of Washington Administrator, personal communication (2018).

Medication	$4,000
Procedure	$3,298
Freezing	$750
Storage	$3,950
IVF (three procedures)	$15,000
Total cost	$26,998

Table 8. Costs to U.S. Navy based on average OCP military pricing. Adapted from DMDC (2019), ART Institute of Washington Administrator, personal communication (2018).

USN Women Utilizing OCP (O1-O4)		Total Cost to USN
10%	939	$25,343,023
9%	845	$22,808,720
8%	751	$20,274,418
7%	657	$17,740,116
6%	563	$15,205,814
5%	469	$12,671,511
4%	375	$10,137,209
3%	282	$7,602,907
2%	188	$5,068,605
1%	94	$2,534,302

Table 9. Total OCP net benefits to U.S. Navy based on procedural and training costs. Adapted from DMDC (2019), Bo (2013).

USN Women Utilizing OCP		Total Cost to USN
10%	6,633	$179,077,734
9%	5,970	$161,169,961
8%	5,306	$143,262,187
7%	4,643	$125,354,414
6%	3,980	$107,446,640
5%	3,317	$89,538,867
4%	2,653	$71,631,094
3%	1,990	$53,723,320
2%	1,327	$35,815,547
1%	663	$17,907,773

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